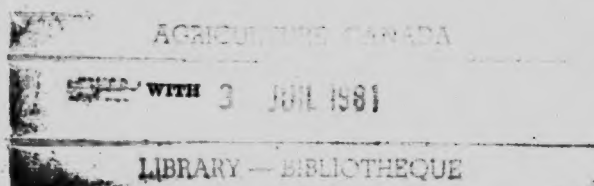


DEPARTMENT OF AGRICULTURE

CENTRAL EXPERIMENTAL FARM
OTTAWA, CANADA

STRAWBERRY CULTURE



DESCRIPTIONS AND LISTS OF VARIETIES

BY
W. T. MACOUN
Horticulturist of the Central Experimental Farm

BULLETIN No. 62

JULY, 1909

Printed by direction of the Hon. SYDNEY A. FISHER, Minister of Agriculture, Ottawa, Ont.

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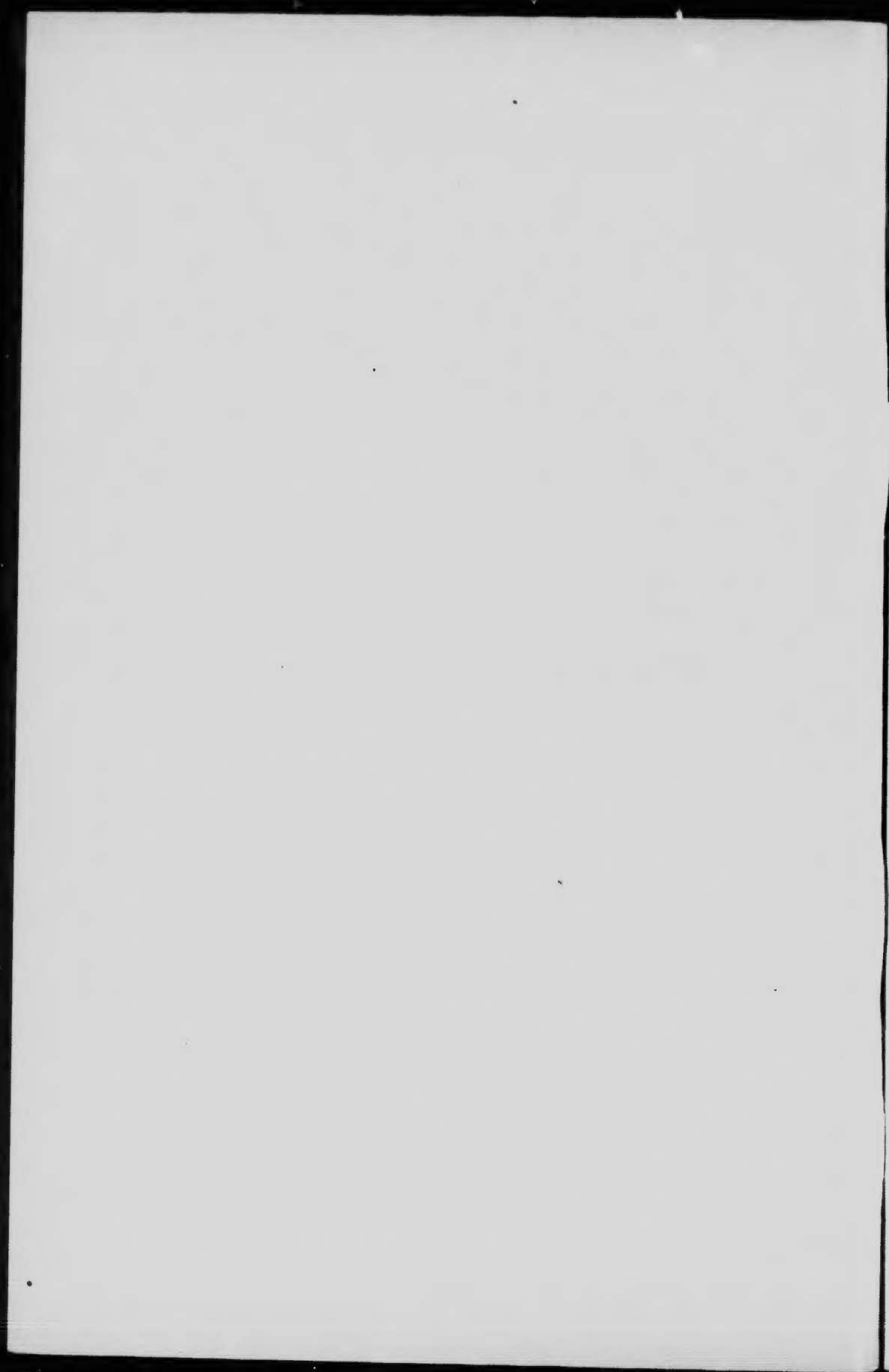
A. MACOUN

Horticulturist, Central Experimental Farm

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JULY, 1909

Published by direction of the Hon. SYDNEY A. FISHER, Minister of Agriculture, Ottawa, Ont.



To the Honourable
The Minister of Agriculture.

SIR,—I beg to submit for your approval, Bulletin No. 62, of the Experimental Farm Series on Strawberry Culture, which has been prepared under my direction by Mr. W. T. Macoun, Horticulturist of the Central Experimental Farm.

The rapid extension of strawberry growing has resulted in the production of very large crops of this valuable fruit, especially in the Eastern provinces of the Dominion, where strawberries have come into very general use. The ease with which new varieties of this fruit are produced from seed, has resulted in the introduction, during the past few years, of a large number of new sorts. Facts regarding the quality, productiveness and general usefulness of these as compared with the best of the older varieties are presented in this bulletin, in accordance with the experience gained by tests carried on for twenty-one years at the Central Experimental Farm at Ottawa. The best methods of preparing the soil, with particulars regarding the most successful treatment to secure an abundant crop, are fully explained and remedies suggested for the more common diseases and injurious insects to which strawberry plants are subject.

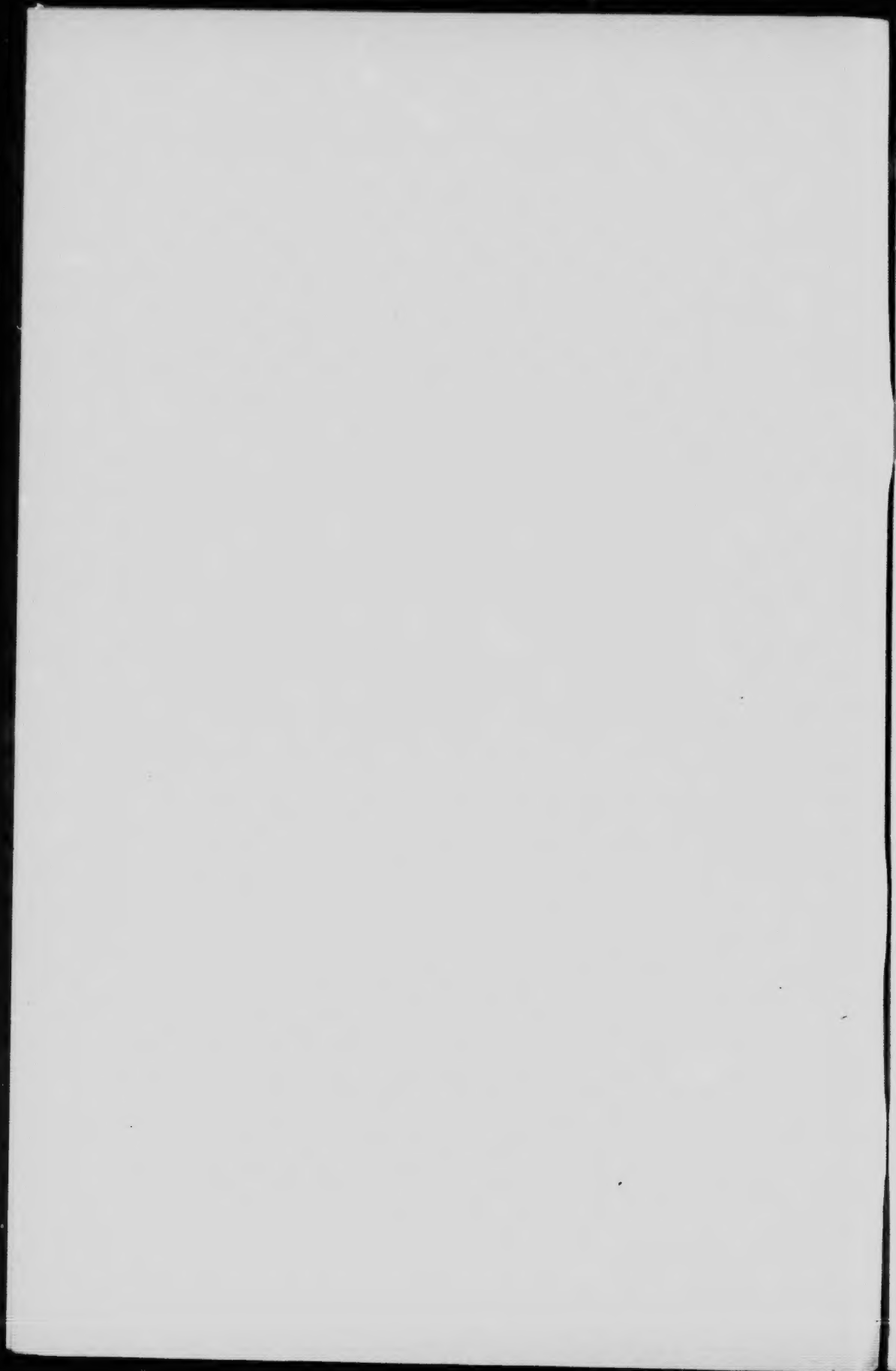
The fact that this useful fruit can be grown so generally, makes it the more important that practical knowledge as to the best methods of cultivation and the most profitable sorts to grow should be generally disseminated. It is hoped that the information given in this bulletin will aid in encouraging farmers to grow this valuable fruit more generally. Where the use of a plot of ground can be easily had, there seems no good reason why every family should not have a ample supply of strawberries during the warm weather of early summer when such an addition to the diet is most refreshing and healthful.

I have the honour to be,

Your obedient servant,

WM. SAUNDERS,
DIRECTOR OF EXPERIMENTAL FARMS.

Ottawa, July 20th, 1909.



THE STRAWBERRY AND ITS CULTURE.

By W. T. MACOUN,

HORTICULTURIST CENTRAL EXPERIMENTAL FARM, OTTAWA.

There is probably no more popular fruit grown in Canada than the strawberry. Ripening as it does early in the season, when everyone is craving for fresh fruit, the luscious strawberry is consumed in large quantities and with unabated relish until its season is over and the supply exhausted. The popularity of the strawberry is more general than that of some fruits from the fact that enough berries to supply the family needs may be grown on a very small area of land, hence it is possible for a large number of persons to grow strawberries. Because of its popularity, many questions are asked regarding the best varieties to plant and the best methods of cultivation, and to meet this demand for information, two bulletins on the Strawberry (No. 5 and No. 27) were published at the Central Experimental Farm, but so many applications were received for these that the supply of both has been exhausted for some time, and in order to meet the enquiries which are continually being received, this bulletin has been prepared, in which will be found the results of the experiments with strawberries which have been conducted at the Central Experimental Farm for the past twenty-one years, and other information regarding the strawberry.

HISTORY OF THE IMPROVEMENT OF THE STRAWBERRY.

The improvement in strawberries has been recent as compared with some other fruits. This fact is indicated by the following words written by Thos. Hyll, in 1593, showing how small the fruit was at that time in England: "Strawberries be much eaten at all men's tables in the summer with wine and sugar and they will grow in gardens until the bigness of a mulberry." There was evidently little further increase in the size of the fruit until the early part of the nineteenth century, when marked advances were made.

The two species which have contributed most largely towards the improvement of the strawberry are the Chilian (*Fragaria chiloensis*) a native of the West coast of both North and South America, and the Common Virginian or Scarlet Strawberry (*Fragaria virginiana*) common all over the Eastern and Central portions of North America. From these have been separated in recent years several sub-species and varieties. A less important species is the Wood Strawberry (*Fragaria vesca*) a native of North America and Europe, and its variety, the Alpine. The Hautbois Strawberry (*Fragaria elatior*) grown first in Germany early in the seventeenth century, is apparently closely allied to the Alpine. It has not been used much in improving varieties.

While the Virginian strawberry was grown in Europe and in England before the Chilian was introduced, the former being brought into Europe early in the seventeenth century, the attempts to improve it were not very suc-

cessful at first, although there were some improved varieties of it in England in the early part of the nineteenth century. The Chilian strawberry was introduced into Europe early in the eighteenth century. The first cultivated English variety which marked a decided advance in the improvement of the strawberry was the Keen's Seedling, first exhibited in London in 1821. This belonged to the group of "Pine" strawberries derived from a species or variety introduced into Europe about the middle of the eighteenth century. It was supposed by some that it was a hybrid between the Chilian and Virginian, but it is now believed by good authorities that the original "Pine" strawberry was but a variety of the Chilian species. From Keen's Seedling many of the English sorts of the present day have descended. The first marked improvement in strawberries in America was when Messrs. Hovey, Boston, Mass., raised the Hovey strawberry in 1834. Up to this time, the varieties cultivated in America had practically all been originated in England or in Europe and had not proved satisfactory. The Hovey was for a long time the most popular kind grown. It is described by Downing in part as being "very large, roundish oval or slightly conical, deep, shining scarlet. Flesh firm, with a rich agreeable flavor." Although the parentage of the Hovey is not certain, it was supposed by the originator to be a cross between Keen's Seedling and the Mulberry Strawberry, both belonging to the "Pine" group, and was itself decidedly of the "Pine" type. Another advance was made when the Wilson's Albany was originated by John Wilson, Albany, N. Y., in 1857. The Wilson was popular for a long time. In an essay on small fruits which was awarded the First Prize by the Ontario Fruit Growers' Association in 1870, the essayist, Wm. Saunders, (now Dr. Wm. Saunders, Director of Dominion Experimental Farms) writes: "We think it is generally conceded that there is only one variety as yet in common cultivation which will really pay to cultivate for market purposes—that is, the Wilson's Albany." Even today with the many larger varieties of better quality available, the Wilson is still planted by persons who desire a berry that will give fair results under indifferent cultivation. Owing to its acidity, the Wilson was never considered of good quality and it ranks low in this respect compared with the best flavoured varieties of today.

Since the Wilson was introduced, hundreds of varieties have been named and sold, and while a very large proportion of these have not proved better, nor as good as, the Wilson from the commercial standpoint, there has been a great general improvement in the strawberry in size, quality, and productiveness.

STRAWBERRY CULTURE IN CANADA.

The strawberry is found wild from the Atlantic to the Pacific Ocean in Canada and from the Southern boundary, as far North as the 64th parallel, and large quantities of the fruit are gathered. The cultivated varieties are grown successfully almost everywhere the wild species are found, but in some districts require protection or irrigation. In the Provinces of Ontario and Quebec the cultivated varieties do well and a large acreage is devoted to the culture of strawberries. The season for ripe fruit opens in Southern Ontario early in June, the season being later northward and eastward. At Ottawa the first ripe fruit has been obtained on June 17, and the last picking of the latest variety was made on July 19. The season in the settled parts of the Province of Quebec is somewhat similar to that at Ottawa, except along the Lower St. Lawrence, where it is much later, the fruit not being ripe until about the first week of July, and the season continuing until the second week of August. The strawberry season for both provinces covers about two months.

PROPAGATING STRAWBERRIES FROM SEED.

Owing to the comparatively short time from the sowing of the seed until the plants bear fruit, the growing of seedling strawberries is one of the most interesting lines of experimental work in fruit culture. If the seeds are sown immediately after ripening they will germinate in four or five weeks if the soil is kept moist, and the plants from them will fruit the next season, if the conditions for growth the first summer are favourable. These conditions may be obtained by growing the plants in cold frames where they can be protected in late autumn and have a longer season for growth. If seed is not sown the same season as planting, it should be held over until spring, mixed with sand or in envelopes. The seed should be sown quite shallow, not more than a quarter of an inch in depth, in well-prepared soil. When the plants are large enough, they should be pricked out about six inches apart, where they will remain until the spring following the planting of the seed. They should then be set out in the open about three feet apart each way. If the plants are grown on a large scale, it may be more practicable to transplant the seedlings directly from the seed-row to the field. No runners should be allowed to form the year the plants are put out in a cold frame. Before a variety is distributed, it should be fruited at least three years, as often the promise of the first season is not borne out the next year. As no two seeds from a cultivated variety are likely to produce strawberries exactly alike, one may have five hundred different varieties from five hundred seedlings of one named sort. As a rule, the proportion of varieties which are as good or better than the best on the market is very small.

Considerable work has been done in growing seedling strawberries at the Central Experimental Farm, but as yet no variety has been produced which was thought worthy of introduction. Of 650 seedlings which fruited in 1889, forty were saved. These have been gradually reduced in number until only six are being tested. Most of these are of very good quality, but lack other characteristics desirable in a commercial berry. In 1897, about 1400 seedlings were raised from some of the best named varieties. These were gradually reduced to 34, among which were some of great promise. In the winter of 1905-6 these were practically all winter-killed. Another lot of seedlings has been raised and set out in the hope of better success, and some very promising varieties have fruited.

PROPAGATING STRAWBERRIES FROM RUNNERS.

The usual method of propagating strawberries is from runners. It is by means of these that the natural increase of a variety takes place. As the first runners which are made root soonest, and hence usually make the strongest plants, these are the best to use in making a new plantation. There has been much discussion during recent years regarding the merits of the so-called "pedigree" plants which have been offered for sale by an American firm, they having claimed that, through years of selection, they had developed a much better strain of certain varieties than those who had not followed this system. In the first place the term 'pedigree' has apparently been improperly used by this firm, as, to have a pedigree the ancestors of a plant or animal must be known, new blood being introduced in each generation through raising a new variety from the seed. A good pedigree is very desirable, both in plants and animals, but, up to the present time, the pedigree of plants for several generations is not often known. In the case of the "pedigree" strawberry plants it is said there has been a selection of plants under favourable conditions of growth, not an introducing of new blood. Plants which have been selected from the best plants year after year and

grown under the most favourable conditions should show some improvement over those not selected, but the claims of superiority of the so-called "pedigree" plants have not been borne out by the results obtained here. In 1903 there were five of these "pedigree" varieties procured and compared with varieties of the same name, which had not been specially selected. These were fruited for two years, but while in some cases the "pedigree" plants yielded better than the others, they did not always do so. While the results obtained do not warrant the purchase of "pedigree" plants rather than others where there is no special claim as to selection, we believe that the principle of selection is good and if thoroughly carried out, is bound to result in an improved strain, which, however, can only be maintained by continued selection.

"EVERBEARING" STRAWBERRIES.

During the past twelve or fifteen years, there has been much interest shown in the so-called "Everbearing" strawberries. These are varieties which, in some localities, will continue to bloom and ripen fruit during the summer and autumn long after other kinds have stopped bearing. This everbearing habit is considered by some botanists to be due to the transformation of the runners of these varieties into flower-bearing stems, the everbearing sorts making few runners. The wild Wood strawberry and its variety, the Alpine, have long been known to fruit more or less all through the summer and autumn and for this reason, they and several cultivated varieties of them are often called the Strawberries of Four Seasons. These all bear small fruit, hence they have little commercial value at present. In 1890 the Oregon Everbearing strawberry was exhibited at the Portland Exhibition and attracted much attention, being of good size. Whatever its everbearing habits may have been in Oregon, it proved very disappointing in this respect when brought to the Eastern and Middle States and to Canada. It was introduced into France about 1893 or 1894, and was highly thought of there for some time, as its everbearing habit was quite pronounced.

In 1893, the St. Joseph strawberry was introduced into France and its introduction marked a new epoch in the history of Everbearing strawberries. This variety was the result of thirteen years' work by the Abbe Thivolet, Clanoves, France, who began in 1880 by crossing the Alpine strawberry with a large-fruited variety, the latter being the female parent. From this cross is supposed to have sprung the St. Joseph, through many generations and selections. In it there is no evidence of Alpine blood. While the St. Joseph strawberry was much larger than the Alpines, which up to its advent were the only cultivated strawberries which showed the everbearing habit regularly, they were small compared with some of the best large-fruited sorts. The Oregon Everbearing was reported in the *Revue Horticole*, France, in 1897, as being much superior to the St. Joseph in point of size, and it was thought would supersede that variety, but did not do so. Seedlings have been raised from the St. Joseph; the St. Antoine de Padoue, one of the best of them, is said to be a marked improvement on the former, bearing more fruit of excellent quality. The Oregon Everbearing strawberry was planted at the Central Experimental Farm in 1895 and the St. Joseph in 1899, but neither of these varieties produced enough fruit after the regular strawberry season was over to make them worth cultivating. It is evident that success with this class of strawberries is largely a matter of climate. After very dry weather when the fruiting season is over—weather which is not favourable to the production of runners—there will often be stalks thrown up when there is a change to warm, damp weather, which, if continued will ripen fruit.

These conditions influence some varieties more than others. One season, this peculiarity will be strongly marked, while the next it may not be noticed at all. The plants of these varieties may sometimes be made to fruit in late summer and fall by removing all the first blossoms. The Pan American, a variety originated in 1898, with Samuel Cooper, of New York State yields very well to this treatment under some conditions. The Louis Gauthier is another variety which sometimes bears in the autumn.



Imperfect Flower.



Perfect Flower.

POLLINATION AND CHARACTER OF THE FLOWERS.

It occasionally happens that a person who has a variety of strawberry which yields much better with him than other varieties which he has growing alongside, concludes to discard all his other kinds and grow that one variety. He does so and is disappointed to find that he has very few berries, and these ill-shaped and worthless. He does not know what to think about it, but writes to the Experimental Farm to learn what is the matter. The reply is sent back: "Are you aware that the flowers of strawberries may be perfect or imperfect, or bisexual and pistillate; in other words, do you know that some varieties of strawberries produce blossoms which have both male and female organs, while other varieties have

only female organs? If you do not, the solution of your difficulty is very easy."

The male and female organs in plants perform the same functions as in animals. The fine dust formed on the stamens, which is shed when the flower is in bloom, is the fertilizing agent, which falls on the pistil and fertilization takes place. If the stamens are absent, or nearly all absent, as is the case in imperfect or pistillate flowers, no fruit, or very little fruit is formed. If a perfect, or bisexual flowering variety and an imperfect flowering variety are growing in close proximity, the flowers on both will be fertilized as insects and winds carry the pollen or dust from the perfect to the imperfect. It very often happens that imperfect-flowering varieties produce the best crops when properly pollinated, and this experience may lead fruit-growers who are ignorant of the foregoing fact, to make the mistake of planting only one variety, which may be imperfect.

A row of a perfect flowering sort should be planted to about every two to four rows of an imperfect variety, to have good results. The proportion will depend on the amount of pollen produced by the perfect sort. Of course, it is not necessary to plant an imperfect variety at all, as there are plenty of good sorts, which have perfect flowers. It is essential to have the perfect and imperfect varieties in full bloom at the same time, as, if the former bloomed before the latter, there would be no object in planting it as a pollinator.

Several terms have been used to express perfect and imperfect flowers, such as Hermaphrodite and Pistillate; Stamineate and Pistillate; Bisexual and Pistillate, but most persons now use the terms Perfect and Imperfect as the least confusing and the most expressive. The contractions of these words used in this bulletin are "Per." and "Imp."

CULTURE: SOIL AND ITS PREPARATION.

If possible, the site for the strawberry plantation should be chosen where snow will lie in winter. A good covering of snow usually ensures a good crop of fruit. One of the most important requisites in a soil for strawberries is thorough drainage, as where water lies on or near the surface, the plants are sure to suffer either in summer or winter. While too much moisture is bad, too little moisture is unfavourable to the development of fruit, hence a soil should be retentive of moisture while not saturated with it. Warm soils, such as sandy loams, will produce early fruit, but friable clay loam will usually produce the best crops. Much, however, depends on the richness of the soil, as strawberries need an abundance of available plant-food to give the best results.

Soil which will grow good crops of roots will usually grow good strawberries. A soil should be chosen, if possible, which does not bake naturally or which by thorough tillage may be brought into such good condition that it will not bake. It is difficult to keep the plantation free of weeds in soil that bakes, and it is also hard to conserve soil-moisture in a dry time.

Soil should be chosen, if possible, that has been prepared in a measure, by growing a crop of roots which have been heavily manured. After the roots or other crops have been removed in the autumn, the land should be stirred deeply, it being a good practice to use a subsoil plough after the ordinary kind for this purpose. By using the subsoil plough the soil may be loosened to the required depth without bringing the subsoil to the surface, which would probably happen if it were ploughed very deep with the ordinary plough. Clover sod ploughed in the autumn is also good, as the sod furnishes humus, but grass-sod land should be avoided as there is great danger of injury from the white grub. In the spring the soil should be brought into good tilth with the harrows and when it is thought best it may be ploughed beforehand.

FERTILIZERS.

The best fertilizer for strawberries is well-rotted barnyard manure, which should be used in large quantities. There need be little fear of using too much—thirty tons of well-rotted manure per acre being a fair application. It may be applied early in the spring before planting and thoroughly incorporated with the soil, or it may be used for a previous cultivated crop so as to get the soil clean and in the best condition for the strawberry plants. Fresh manure is not as satisfactory as rotted, for it may make the soil too loose, causing it to dry out quicker and make the conditions bad for newly-set plants. On heavy soils, fresh manure may be used with better results than on lighter soils, but as there are likely to be many weeds grow if green manure is used, rotted manure is preferable even on heavier soils. If fresh manure is used it will be better mixed with the soil by planting time, if it is applied in the previous autumn. Wood ashes are very useful for a top-dressing and from 50 to 100 bushels per acre may be applied broadcasted early in the spring when the land is being harrowed, the larger quantity being used for land which is poor in potash. An application of even twenty-five bushels per acre should give beneficial results. If barnyard manure cannot be obtained easily, nitrogen and humus may be added to the soil by ploughing under clover, peas or some other leguminous crop; potash, by using from 200 to 300 pounds per acre of muriate of potash, if wood ashes cannot be obtained; phosphoric acid, by the use of ground bone, at the rate of from 200 to 300 pounds per acre before planting. Nitrate of soda is also useful for furnishing nitrogen unless it can be obtained in a cheaper form, by the use of barnyard manure or leguminous crops. An application of 100 to 150 pounds nitrate of soda broadcasted just before the flowers open in the spring, is sometimes desirable if the plants are not making vigorous growth.

PLANTS AND THEIR TREATMENT.

If the plants for setting out are obtained from a distance, they should be ordered to arrive as early in the spring as possible after the soil can be worked, and planted soon after arrival. It is often, however, not convenient to plant at once; but in any case, the parcel containing the plants should be opened up when it arrives, otherwise they are liable to heat or dry out, either one of which conditions should be avoided if possible. The plants should now be heeled in in some place where the soil is well drained. Open a trench sufficiently deep to cover the roots of the strawberries well and so that the crown will be just above ground. Now place the plants close together, but in a single row in the trench. Another trench is now opened parallel with the first and about six inches from it, using the soil to cover the roots of the plants in the first trench. This soil should be firmly packed or tramped against the roots so that the moisture will come into close contact with them. If loosely heeled in, they are very likely to dry out and the plants die. Other trenches should be dug parallel with the first two, if needed. By the time the field is ready for planting, these heeled-in plants will have made new roots and be in better condition for planting than if they had been set out at once. The best plants for autumn planting are what are known as "pot" plants. These are obtained by sinking two and one-half inch pots filled with rich friable soil in the ground and placing a new runner in each of them. These root and make good plants by late summer. The advantage they have over plants rooted in the ordinary way is that when they are transplanted they are taken from the pot and re-planted with a ball of earth without disturbing the roots. Hence they are but little checked and will soon go on

growing again, making stronger plants, which will bear more fruit than the ordinary ones.

Before planting, it is a good plan to remove all the large leaves of the plants except about two of the healthiest ones. This prevents too rapid transpiration of moisture from the plant before it becomes established and may often save it when dry weather sets in immediately after planting. Long and straggling roots may also be cut off at this time, the removal of about one-third of the roots being a good practice. When possible, one's own plants should be used as they are much more likely to live than those procured from a distance, as the former can be dug and planted within a few hours while still fresh. The best plants to use are the strongest of those which have been made the previous year. Plants which have already fruited should not be used as they are much more difficult to transplant and their vitality has been weakened by the production of runners. It is a good practice, if it can be managed, to grow plants for setting in a special propagating bed, the old plants in which, not being allowed to fruit, make stronger runners and plants than do the fruiting-plants. Furthermore, the extra attention to the cultivation of the soil and to the placing of the runners in such a bed will ensure good plants.

PLANTING.

Successful planting may be done either in the spring or autumn. Early in the spring, however, is the most satisfactory time, as, if the plants are set then, when the soil is in good condition and cool and moist, they will make rapid growth and many runners during the summer, if properly looked after, and produce a full crop of fruit the following season. If planted in the autumn, there will, as a rule, only be a light crop of fruit the following season, and unless the weather is favourable and the soil is moist when the plants are set, there may be little growth. If planting is done in the late summer or autumn it should be as soon as the plants can be obtained with sufficient roots and when the soil is moist. The most satisfactory way for the average person in Eastern Canada to grow strawberries is in what is known as the matted row. The plants are set from fifteen to eighteen inches, or even more, apart in rows three and one-half to four feet apart. The varieties which make a large number of runners, such as Warfield, Senator Dunlap, and Splendid, need not be planted as closely as those which make fewer runners, such as Bubach, Buster, Glen Mary, and Williams. If the plants are set early in the spring and have a long season for growth, the varieties which make a large number of runners may be planted 24 inches apart in the rows, thus admitting of cultivation both ways for a time thereby reducing the number of weeds and ensuring better growth. As soon as the distances have been decided upon, the rows may be marked with a marker and then again cross-marked so that plants may be set where the lines intersect. Long rows are desirable as, with them, time will be saved in cultivation. Planting may be done either with a spade or with a trowel or dibble. When planted with a spade, two persons are required for the work, usually a man and a boy. The man takes the spade and opens the hole by forcing the spade into the ground pressing it forward and backward. As soon as it is withdrawn, the boy places a plant in position and the man presses the soil firmly against it with his foot. This method is very rapid and, if the soil is well pressed against the plant, is quite successful. A surer method of obtaining a perfect stand is by using a trowel or dibble for opening the hole, whereby the plant is more likely to be set the proper depth, and more care is usually exercised in spreading the roots and firming the soil about the plants. By this method, one person both opens the hole and sets



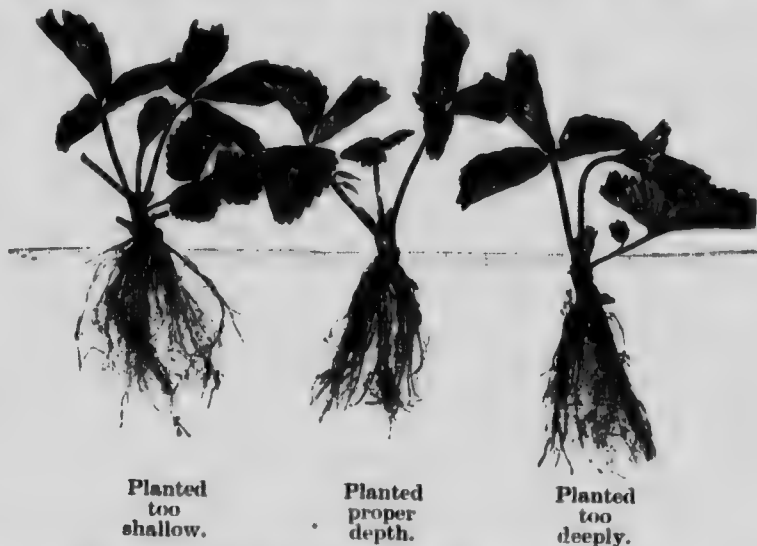
Strawberry Plantation, Central Experimental Farm, Ottawa. Mulched for Winter.



Strawberry Plantation, Central Experimental Farm, Ottawa. Blooming Season.

(PLATE I.)

the plant. Great care should be taken to have the crown of the plant just at the surface of the ground after it has been pressed in when planted. If it is too high the crown will dry out, and if too low it will be smothered. Care should also be taken when planting, to spread the roots against the



sides of the hole. Planting machines are used by some growers and give good satisfaction when the work is well done and the season favourable. If both perfect and imperfect varieties are planted there should be about one row of perfect to two to four of imperfect, as previously stated.

CULTIVATION.

As the value of the future crop will depend largely on the strength of the runners and new plants which are formed during the early part of the summer, it is very important to encourage rapid growth from the outset. Cultivation should begin as soon as possible after the plants are set and the surface soil should be kept quite loose and free from weeds until the cultivator interferes with the runners. The early cultivations should be deep in order to loosen the soil in which the roots are to grow, and to warm and aerate it, making conditions for growth of fruit as favourable as possible, but as soon as there is danger of injuring the roots of the plants, cultivation should be shallow. Hoeing will be necessary occasionally in order to destroy all weeds and loosen the soil close to the plants. All blossoms which appear during the first season should be pinched off so as to reserve the strength of the plants for the production of runners. Most varieties make far more runners than should be allowed to remain, and, if one is making a specialty of strawberries or wishes to get the finest berries, the best plan is to place the runners so that they will root more quickly, and to destroy all those which are not required in following the system which it has been decided to adopt. In the prairie provinces, where winds prevent the prompt rooting of runners, it is important to hold them in place until they root with stones, pieces of sod, an inverted crotch or by any other suitable method.

FORMING THE MATTED ROW.

The best way to grow strawberries for general culture in Ontario and Quebec is in the matted row. By this method, labour is economized and the results, while sometimes not as good as where special methods are adopted, are obtained with the least expense and the greatest profit. Where a special market is to be catered for and when desired for home use, strawberries may be grown by other methods which will result in larger and finer fruit. While many who grow strawberries in the matted row do not take the trouble to place the runners as they form, it pays to do so, as the sooner they take root, the stronger the plants will be by autumn and the more fruit will be produced the next season. All that is necessary is to place the runners so that they will be as nearly uniformly distributed as possible in order to economize space, and to put a little soil over them to hold them in place, at the same time leaving the terminal bud bare. When treated in this way they will root quickly. To get the best results, runners should not be nearer than from 4 to 6 inches apart, all others being destroyed; but in practice it is often difficult to accomplish this and restrict them to this area, as some varieties make a great many runners. These are, however, the kinds which have most need of thinning, as, when the plants are very thick, the fruit is too small. The width of the row formed by autumn will depend on the number of runners which are made, but, if planted early and properly cared for, most varieties will make a row two feet wide. At this width, there would be a path 18 inches wide left for the pickers between the rows. As some varieties would cover the whole space between the rows with runners in one season, it is necessary to remove those not wanted with the cultivator or hoe.

SINGLE AND DOUBLE HEDGE ROW SYSTEMS.

The so-called single hedge and double hedge row systems are merely modifications of the matted row. The runners, instead of being allowed to form indiscriminately, are most of them removed and the rest placed where it is desired to have them grow. In the single hedge row system, two to four runners are left on and these are placed in line with the row on each side of the parent plant. When grown in this way the rows are two and one-half to three feet apart and the original plants about two feet or more apart in the rows. When the row is formed, the plants are six to eight inches apart in a single row.

In the double hedge row system, six runners are left to each plant one on each side of the plant in the row and two on each side of the original row, all about equal distances apart. Trained in this way, the original rows should be about three feet apart and the plants two feet or more apart in the rows.

The "twin" hedge row system provides for two rows 16 to 18 inches apart with the plants at first about two feet apart in the rows, with a wider space of two feet for a path and for cultivation between each pair of rows. The new plants are placed six to eight inches apart between the pair of rows. The hedge row systems require considerably more labour than the matted row, but the returns will often well repay the grower for the extra amount of work. By this method the plants get more opportunity to develop strong crowns, better cultivation can be given and more of the plant food in the soil will be available, resulting in larger and better fruit.

HILL SYSTEM.

Large berries may be obtained by growing the plants by what is

known as the "Hill System." The plants are set from 12 to 15 inches apart, in rows two to two and one-half feet apart; the blossoms are pinched off the first season as in the other system and no runners are allowed to form. By this method a very strong crown is developed; the plants, having more room, become very vigorous and, as a result the fruit is large and sometimes as good crops are obtained as from the matted row. However, winter injury is much more likely to occur when plants are grown individually, and if plants grown in hills die from heaving or from some other form of winter-killing they leave large blanks, causing a great lessening of the crop. Unless kept well cultivated or well mulched in summer, plants suffer more in a dry time in hills than in the matted row where the crowns are better protected by foliage. If the plants are kept well mulched, very fine fruit is produced when strawberries are grown in hills, which makes this method sometimes preferable when growing strawberries for home use.

WINTER PROTECTION.

After permanent frost has set in and the ground is quite solid, the plants should be covered with a light coat of clean straw, that which will not pack closely over the plants being the best, marsh hay being very good and free from weed seeds. This mulch will prevent the alternate thawing and freezing of the ground in the spring and protect the plants if there is not much snow in winter. A heavy mulch may cause heating in the spring before it is removed, and as a light mulch of two or three inches is sufficient, more should not be used. It has been occasionally recommended to grow something between the rows of strawberries during the latter part of summer, which could be used to hold the snow in the winter, but this is not a desirable method as, while growing, it exhausts the moisture from the soil at the expense of the strawberry plants. While plants will often come through the winter without protection, it is best not to take any risks. After the frosty weather of early spring is over and before the plants begin to grow, they should be uncovered and the straw put between the rows to keep the fruit clean. If the soil is one which bakes or dries out easily, it is a good plan to remove the mulch, cultivate, and put it back between the rows when conditions will be better for conserving moisture. As soon as the fruit has been picked, the straw should be removed altogether, the plantation ploughed up, or, if left for another season, it should be weeded and the surface soil loosened with the cultivator so that the new runners may have a chance to root.

RENEWING THE PLANTATION.

The most satisfactory results are obtained when only one full crop is gathered from a plantation. If, for instance, plants are set this spring, the plantation should be ploughed up after the fruiting season of the next year. There will thus be a new plantation made every year. By this system, much better fruit is obtained as the plants are not so thick in the row and the soil can be kept much freer of weeds. Where the white grub is troublesome, it is very important to renew the plantation every year, as this pest increases rapidly in old plantations and sometimes almost ruins the crop. It is quite possible to obtain two good crops, or even more, from a plantation by careful management, but the older the plantation, the less the crop will be and the smaller the fruit, as a rule.

RENOVATING AN OLD BED.

While as a rule the most profitable method of growing strawberries is

to take only one crop from a plantation, and at the most two crops, it is sometimes not practicable to renew small plantations after the second crop. Under such circumstances, there are several ways in which the bed may be improved. Usually an old bed is grown up with grass and weeds and crowded with strawberry plants, and to improve the bed, these must be reduced as much as possible. As soon as the fruit is off, the leaves and grass should be mown off and burned. One plan is to plough or dig down the middle of the row, then thoroughly cultivate or rake. Another method is to narrow the row on each side to a width of 8 to 12 inches, turning the sod towards the row. Still a third plan is to plough lengthwise through the centre of the row, then cross-plough. It is necessary in following any of these methods to level the soil afterwards with the harrow, cultivator or hoe. Usually the work is finished with the hoe by cutting out all surplus plants and bringing the soil about those remaining, which will give them better conditions for making roots. It should be remembered, when renovating the bed, that it is not necessary to leave many plants. Plants left sixteen to twenty inches apart should make a good row by autumn. Those left should be the youngest and strongest. It is a good plan when renewing, to work in some short rotted manure to improve the soil.

IRRIGATION.

During the fruiting season the strawberry needs a large supply of moisture to give maximum crops. In some seasons, owing to dry weather, the crop is reduced very much, the season is shortened and the profits are small. If, under those conditions, there were available a supplementary supply of water which could be used for irrigating, a marked improvement in the crop would be ensured in many cases. Where men are growing plants for sale, more runners will be made and the plants will be stronger if an abundant supply of water during the growing season is available. These results are brought out in the following quotations from letters received from correspondents:

Wilfrid Wheeler, Concord, Mass.: "On about half an acre which fruited under irrigation, plants grown in hills, I picked on some varieties more than two quarts per plant, while matted rows not irrigated would not produce more than one-quarter of a quart per plant. Of course, this was not all due to irrigation, but I know that the plants were greatly benefited by the water. If I were going to grow plants only for fruit I should have the water ready to use in a dry season when the berries are forming, but should use it sparingly when the plants are growing, as the tendency of much water is to make the plants root near the surface and much winter damage is the result, but water at the fruiting season is all right."

C. Becker, Vineland, N. J.: "On a crop of strawberries it (irrigation) was the means of ripening every berry that set, with no small berries, as is the case without irrigation."

C. P. Newman, Lachine Locks, Que.: "My soil is a heavy loam and with good cultivation or a heavy mulch holds water through very dry times. In the spring of 1903 when we had the sixty days' drought, rain came on June 18th, and I had one of the finest crops that I ever had. That satisfied me that irrigation was for me an extravagance. But with lighter land that suffers much in drought, water easily obtained and very intensive cultivation, it is possible, in my opinion, that it might be profitable."

"I do not think that irrigation would altogether relieve a season like the last. When the temperature is over 80 degrees, the strawberry suffers, and it would take very large quantities of water to keep the ground moist enough to cool the soil. Plants of the Uncle Jim type resist heat more than the others, as you know."

J. L. Hilborn, Leamington, Ont., applied water with the hose on strawberries and found it very satisfactory in a small way.

Henry A. Dreer, Philadelphia: "As an illustration, we can state that we layer during the months of July and August many thousands of strawberry plants which we sell at that season of the year as pot plants. Before the installation of the irrigating system, losses during unfavourable weather were frequently from 20 to 40 per cent. Since installing the irrigating plant, there is practically no loss at all."

VARIETIES.

Owing to the ease with which a new variety of strawberry is originated, and the short time it takes to fruit the same, the number of new sorts each year in America is very large. Only a small proportion of those which are produced are better than, or even equal to, the best which are already on the market, but often the originator is not the most competent person to judge of the relative value of his seedling, and as a result many new sorts are offered for sale every year. It is the work of the Experimental Farm to test these new varieties as they appear, and, having compared them with standard sorts, publish, when deemed advisable, a reliable description of them and the yield obtained. During the past twenty-one years, 596 named varieties have been tested at the Central Experimental Farm. Of this number only 14 are still under test of those grown during the first two years. This does not mean that nearly all the varieties tested at first have deteriorated, but that better kinds have been introduced and have taken their places. It is interesting, however, to note that of eleven varieties which were considered very promising twenty years ago, three are still among the most promising under test, namely, the Bubach, Warfield, and Daisy. The Daniel Boone is another variety of the Warfield type which continues to do well, though under test for twenty-one years. Williams has been tested for eighteen years and is still one of the best commercial berries for long-distance shipment.

It should be stated here that all the tests with varieties have been made on sandy loam soil. On clay loam the results might have been different, but this soil was not available.

The ideal variety of strawberry has yet to be found, but, as an aid to those who are originating new kinds, the following description of an imaginary variety approaching perfection is herewith given:

DESCRIPTION AN IDEAL VARIETY OF STRAWBERRY.

PERFECT.—Plant hardy, very productive; vigorous, making a moderate number of runners; should succeed well on a great variety of soils; must withstand drought well. Foliage large, abundant; rust-resistant. Flowers borne on stiff stalks of sufficient length to keep the fruit well off the ground; pollen abundant. Fruit: size, large to very large from beginning to end of picking season; form, roundish conical with a slight but not prominent neck, regular; calyx or hull small; seeds not prominent; colour of uniform lively, deep glossy red from tip to stem; not showing scald readily; flesh firm, red, juicy with a tender core; subacid, sprightly, with a pleasant high flavour. Season, very early to very late or, in other words, all summer.

A berry of the foregoing description is not an impossible one to realize, and if those having strawberries to introduce would have the ideal strawberry more in mind, there might not be so many inferior sorts introduced every year.

As the ideal strawberry has not yet been found, until this ideal ap-

pears, it is necessary to plant several kinds, each having its own good points, so that one may have the greatest quantity of fruit of good size, appearance and quality from the beginning to the end of the season.

In order to furnish information regarding the best varieties for certain purposes, separate lists are published in addition to the general list.

VARIETIES OF STRAWBERRIES RECOMMENDED.

There are so many varieties of named strawberries introduced each year that the list of those recommended has to be changed from time to time, as those of superior merit are found.

The following are those which are recommended at the present time:

COMMERCIAL.—Beder Wood (per.), Splendid (per.), Warfield (imp.), not suited to light soil, Williams (per.), Greenville (imp.), Bisel (imp.), Sample (imp.), Buster (imp.), Pocomoke and Parson's Beauty are also two very good commercial berries.

DOMESTIC.—Excelsior (per.), Splendid (per.), Senator Dunlap (per.), Lovett (per.), Ruby (per.), Bubach (imp.), Wm. Belt (per.).

MOST PRODUCTIVE VARIETIES.

In the following table will be found a list of the fifty varieties which have given the best average yield for from two to five years. In this test from 200 to 350 kinds were grown each season. Per. after a variety stands for Perfect, and Imp. for Imperfect:

Average Rank.	Number of years averaged.	Rank, 1905.	Name.	Flowers.	Date of full bloom, 1905.	Date of first ripe fruit, 1905.	Date of first picking, 1905.	Date of last picking, 1905.	Number of pickings, 1905.	Weight of 25 average berries, 1905.	Total yield, 1905.	Average total yield.
										Oz.	Lbs.Oz.	Lbs.Oz.
1	2	1	Pocomoke	Per.	June 6	June 24	June 27	July 14	7	7	23 4	22 11
2	5	15	Sample	Imp.	" 5	" 26	" 27	" 18	8	7	15 3	21 5
3	5	42	Bisel	"	" 5	" 27	" 29	" 18	7	6½	10 4½	19 7½
4	5	73	Buster	"	" 7	" 26	" 27	" 14	7	7½	7 14½	19 5
5	4	190	Mele	"	" 7	" 27	" 29	" 14	5	6½	2 10	24
6	5	34	Glen Mary	Per.	" 5	" 26	" 29	" 18	8	7½	11 2½	18 15
7	5	19	Greenville.....	Imp.	" 5	" 24	" 27	" 14	8	7	13 6	18 13
8	5	18	Daniel Boone	"	" 2	" 21	" 24	" 14	8	5	13 3½	18 10½
9	5	65	Stevens' Early	"	" 5	" 21	" 24	" 14	9	5	8 8½	18 6½
10	5	161	Afton	"	" 5	" 24	" 27	" 11	6	5	3 2	17 13½
11	2	14	Splendid	Per.	" 5	" 24	" 27	" 18	8	6½	15 4½	17 9½
12	5	121	Daisy	Imp.	" 5	" 24	" 27	" 14	7	6½	4 15½	17 8
13	5	9	Maggie	"	" 5	" 24	" 27	" 14	7	6	16 11	17 3½
14	5	16	Dora	"	" 7	" 23	" 24	" 14	8	6½	15 2	16 15½
15	5	20	Carleton	"	" 5	" 21	" 24	" 18	10	6½	12 11½	16 14½
16	5	123	Howard's 41	"	" 7	" 20	" 27	" 14	7	6	4 14	16 12½
17	5	182	Enhance	Per.	" 5	" 24	" 27	" 11	6	6	2 6½	16 1
18	5	3	Carrie	Imp.	" 8	" 29	" 30	" 18	6	7	18 9	16 1
19	5	146	Warfield, No. 2	"	" 2	" 23	" 27	" 14	7	5½	3 15	15 12½
20	5	72	Thompson's Late	"	" 5	" 27	July 3	" 18	6	5½	7 14½	15 8½
21	5	129	Beder Wood	Per.	" 2	" 23	June 24	" 11	8	5	4 13	15 7½
22	2	17	Early Beauty	"	" 2	" 19	" 24	" 14	6	4½	7 8½	15 6½
23	4	88	Cole's Seedling	"	" 8	" 28	" 30	" 18	7	6½	6 16½	15 2
24	2	58	Lyon	Imp.	" 8	" 25	" 27	" 14	7	6½	9 2½	15 0
25	5	183	Barton's Eclipse	"	" 5	" 28	" 29	" 11	5	6½	2 6½	14 12
26	5	101	Swindle	"	" 2	" 26	" 27	" 18	8	6	6 5	14 11
27	5	67	John Little	"	" 5	" 23	" 24	" 14	9	5	8 3½	14 11
28	5	70	Wonderful	"	" 5	" 23	" 24	" 11	7	6	8 0	14 8½
29	5	93	No Name	Per.	" 5	" 23	" 24	" 11	7	6½	6 9½	14 8½
30	5	115	Bubach	Imp.	" 5	" 24	" 27	" 14	7	7½	5 5½	14 8
31	5	48	Parker Earle	Per.	" 2	" 24	" 27	" 18	9	6½	10 0½	14 6
32	5	81	Williams	"	" 8	" 27	" 27	" 14	7	6½	7 5½	14 2½
33	3	107	Marie	Imp.	" 5	" 28	" 29	" 14	6	7½	5 15½	14 2½
34	5	86	Clyde	Per.	" 5	" 20	" 27	" 18	8	6½	7 0	14 0½
35	5	28	Tennessee Prolific	"	" 5	" 24	" 27	" 18	8	6½	12 1½	13 15½
36	5	98	Arkansas Travel'r	"	" 7	" 26	" 27	" 14	7	6	6 6	13 13
37	5	155	Crescent	Imp.	" 2	" 25	" 27	" 14	7	5	3 6	13 12
38	5	87	G. H. Caughell	Per.	" 2	" 21	" 24	" 14	7	5½	6 15½	13 5½
39	2	5	Big Bohs.	"	" 5	" 26	" 29	" 28	8	8	18 1½	13 1½
40	5	137	Bomba	Imp.	" 5	" 26	" 27	" 14	8	5½	4 7½	13 1
41	5	6	Mrs. Cleveland	"	" 7	" 25	" 27	" 18	8	7	16 15½	13 1
42	3	4	Kansas	"	" 8	" 27	" 29	" 18	8	6½	18 6	12 15
43	5	179	World's Champ'n	Per.	" 7	" 26	" 27	" 14	7	5	2 7½	12 9½
44	2	24	Success	"	" 5	" 26	" 27	" 14	7	6½	12 6	12 9½
45	5	133	Dr. Arp	Imp.	" 5	" 25	" 27	" 14	7	6	4 9	12 9
46	5	23	Morgan's Favorite	Per.	" 5	" 25	" 27	" 18	8	7½	12 8	12 7
47	5	22	Princess	Imp.	" 5	" 21	" 24	" 18	10	5½	12 8	12 7
48	5	47	Boynton	"	" 5	" 23	" 24	" 14	9	5	10 1½	12 6
49	5	108	Kyle	Per.	" 4	" 25	" 27	" 14	8	6½	5 15	11 14½
50	5	95	Hood River	Imp.	" 5	" 24	" 27	" 14	7	7	6 8	11 13

The above yields were, as a rule, from two matted rows, each fifteen feet in length and three and one-half feet apart. Estimating on this basis, the average yield per acre of Pocomoke for two years was at the rate of 9412 lbs. 8 ozs., and of Sample 8841 lbs. 11 ozs. These are not exceptionally large yields, as the highest yield obtained at the Central Experimental Farm during the five years was from the Greenville in 1901, that variety yielding that year at the rate of 14,818 lbs. 3 ozs. per acre. In the

above table the average weight of twenty-five berries was taken at the second picking of each variety.

EARLY VARIETIES.

As the earliest varieties usually bring the best prices, it is important to plant those which will yield the greatest quantity of fruit as early as possible. It is also important to have varieties which bear fairly large fruit, although size in fruit is not quite so important with early as with main-crop varieties. A firm berry is also desirable where they are shipped to a distance.

In the following table and in the descriptions of varieties, will be found most of the information which is desired regarding early sorts. The twenty varieties given below have been found to be the earliest of those which are being grown at the Central Experimental Farm. Kinds which have been discarded some time ago are not given in this table. The varieties are arranged in the following table according to the yield from the first picking:

	Average Date of First Ripe Fruit. Three years.	Average Date of First Pick- ing. Three years.	Average weight of 25 average berries. Three years.	Average yield per acre First picking. Three years.	Total average yield per ac. All pickings. Three years.
			Oz.	Lbs. Oz.	Lbs. Oz.
Excelsior.....	June 18	June 21	5	680 10	4848 10
Maggie.....	" 20	" 22	5½	535 14	6041 6
Osceola.....	" 18	" 21	4½	453 12	3837 7
Lincoln.....	" 19	" 21	4½	440 13	3258 6
Eleanor.....	" 21	" 23	5½	408 6	3085 8
Daniel Boone.....	" 20	" 22	6	401 14	8167 8
Beder Wood.....	" 19	" 21	5½	363	5244 1
Van Deman.....	" 20	" 22	6	337 1	3148 3
Mayflower.....	" 17	" 21	5	328 7	2348 11
August Luther.....	" 18	" 21	4 (2 years)	298 3	1400 2
H. & H.....	" 21	" 23	5½	287 6	5360 12
Hawaii.....	" 19	" 21	4½	283 1	4131 5
Bomba.....	" 21	" 23	5½	280 14	4874 9
Crescent.....	" 21	" 23	5	276 4	6585 14
Michel.....	" 19	" 21	4½	242	1959 12
Warfield.....	" 20	" 23	5½	233 6	5378
Stevens' Early.....	" 19	" 21	6	211 12	7318 5
John Little.....	" 20	" 22	5	168 9	6501 9
Boynton.....	" 20	" 21	5	142 10	6248 13
Wilson.....	" 20	" 21	5½	95 1	2296 13

LATE VARIETIES.

As the demand for strawberries is very great as long as they can be obtained at reasonable prices, it is important to have varieties which will extend the season as much as possible. As a rule the latest kinds are not so productive as those of mid-season, which is largely due to the hot, dry weather which usually prevails towards the close of the strawberry season and which is unfavourable to the development of fruit. The late varieties which produce the greatest crops under these trying conditions are, as a rule, the best kinds to plant to extend the season, although there are some sorts which begin to ripen their fruit in mid-season and which keep up the size of the fruit almost as long as the latest. In the following list of ten varieties will be found the latest strawberries now being tested at the

Central Experimental Farm. A few kinds, perhaps as late or later, have been discarded as not being sufficiently productive, or for other reasons, among them being the Timbrell, Hunn, and Rough Rider. New Globe is a promising late sort, being more productive than most late varieties. Joe is also a good late variety. Robbie is somewhat like Nettie.

Average Rank	Number of years averaged	Name	Average date of full bloom.	Average date of first ripe fruit.	Average date of first picking.	Average date of last picking.	Average weight of 25 average berries.	Average Total yield.	Average Total yield per acre.
1	4	Giant	June 5	June 28	July 1	July 15	Oz. 7½	Lbs. Oz. 13 0	Lbs. Oz. 5383 2
2	5	New Dominion.	" 3	" 20	June 20	" 18	6½	11 6	4719
3	5	Brandywine.....	" 5	" 27	" 29	" 18	7½	10 14½	4524 9
4	5	Surprise.....	" 2	" 28	" 30	" 16	7	9 13	4070 13
5	5	Hatch Ex. Station	" 6	" 28	" 30	" 17	7	9 10	3003
6	3	Sampson	" 4	" 29	" 30	" 18	7½	8 0½	3487 6
7	5	Ridgeway	" 5	" 27	" 30	" 17	7	8 2½	3377 3
8	5	Gandy.....	" 6	" 29	July 2	" 17	7½	7 5½	3040 2
9	5	Louis Gauthier.	" 6	July 1	" 3	" 19	7½	6 14	2852 2
10	4	Klondike	" 5	" 1	" 3	" 17	6½	6 4	2503 1
11	3	Nettie.....	" 6	" 3	" 5	" 17	7½	4 2	1711 5

VARIETIES WHICH KEEP THEIR SIZE BEST UNTIL THE END OF THE SEASON.

The fruit of some varieties of strawberries falls off rapidly in size after the first few pickings, while others maintain the size well until the end of the season. It is, therefore, important to plant varieties, when practicable, which will produce good-sized fruit from one end of the picking season to the other. At the Central Experimental Farm, notes have been kept regarding this, and the following kinds have been found to give the largest fruit at the end of the season. As it is important to know the varieties of medium or medium late season which keep their size well, as they are usually the most productive, they are separated from the latest sorts:

MEDIUM AND MEDIUM LATE.—Barton's Eclipse, Beverly, Big Bobs, Buchach, Buster, Carrie, Clyde, Cole's Seedling, Dewey, Enhance, Enormous, Gibson, Glen Mary, Hero, Howard's 41, Irene, Kyle, Lloyd's Favorite, Marie, New York, Oregon Iron Clad, Repeater, Ruby, Sample, Sam Sperry, Scarlet Ball, Twilight, Uncle Jim, Williams, Wm. Belt, World's Champion, Yant.

LATE.—Brandywine, Commonwealth, Gandy, Giant, Hatch Experiment Station, Klondike, Latest, Louis Gauthier, Nettie, New Dominion, New Globe, Ridgeway, Robbie, Sampson.

VARIETIES HAVING THE FIRMEST FRUIT.

In order to ship berries successfully to a distant market, it is necessary

to grow a firm variety that will stand transportation well. In making descriptions of varieties grown at the Central Experimental Farm, the firmness of the berry is noted, hence it is possible to give the following list of those which have been found to be the firmest:

FIRMEST.—Anna Kennedy, Beverly, Big Bobs, Brandywine, Crescent, Cyclone, Enhance, Excelsior, Geisler, Giant, H. and H., Granville, Joe, Klondike, Manwell, Miller, Morgan's Favorite, Nettie, New Cobe, No Name, Parson's Beauty, Pocomoke, Robbie, Rough Rider, Sampson, Superior, Williams, Wm. Belt, Yant.

VARIETIES HAVING THE LARGEST FRUIT.

The amateur grower likes to have varieties which produce a large fruit and the man who sells fruit to special customers also prefers the largest, if they are suitable in other respects. As twenty-five average berries of each kind are weighed from year to year at the second picking, it is possible to give the following list of the twelve varieties giving the largest fruit. The average weight is for five years, unless otherwise specified:

Variety.	Flower	Average Weight for 5 years of 25 Average Sized Berries.
		Oz.
Maximus.....	per.....	8 5-6
Enormous.....	imp.....	8 1-12
Bubach.....	imp.....	7 11-12
Gladstone.....	per.....	7 3-4
Glen Mary.....	per.....	7 7-12
Carrie.....	imp.....	7 7-12
Ridgeway.....	per.....	7 5-12
Brandywine.....	per.....	7 5-12
Sample.....	imp.....	7 1-3
Buster.....	imp.....	7 1-6
Clyde.....	per.....	7 1-6
Hood River.....	per.....	7 1-6

Some newer varieties have also produce large fruit. The following is the average for two years:

Big Bobs, 8 ozs.; Joe, 8 ozs.; Armstrong, 7 7-8 ozs.; Yant, 7 5-8 ozs., Uncle Jim, 7 3-8 ozs. Other varieties producing very large fruit are New Globe and Gibson.

VARIETIES HAVING THE MOST ATTRACTIVE FRUIT.

An attractive berry is very desirable, especially in mid-season when there is the greatest competition. A berry to be attractive should be of good size, regular in shape, and of a lively but rather deep scarlet or crimson, with a glossy surface. It has been found by experience that the light scarlet berries do not sell so well as the darker shades, if the latter colour is not dull. The seeds should not be too prominent, but should not be much sunken. The following are considered the most attractive of those grown at the Central Experimental Farm:

MOST ATTRACTIVE.—Anna Forest, Anna Kennedy, Barton's Eclipse, Bisel, Bomba, Bubach, Daisy, Daniel Boone, Eleanor, Hood River, Irene, Joe, Kittie Rice, Lloyd's Favorite, Logan, Lovett, Marie, No Name, Parson's Beauty, Ridgeway, Sample, Satisfaction, Senator Dunlap, Sherman, Snowball, Steven's Early, Tennessee Prolific, Van Deman, Warfield, Winnie Warfield.

VARIETIES HAVING THE BEST QUALITY.

Varieties having the best quality means, in this instance, those which

have the agreeable characteristics of the strawberry developed in the highest degree. As tastes differ considerably, that which is considered best in quality by one is not thought highly of by another, but it is believed that this list will include most of those which would be considered best generally:

BEST IN QUALITY.—Beverly, Big Bobs, Gibson, Granville, Ham, Jucunda Improved, Kittie Rice, Luxury, Marshall, Nich Ohmer, Pennell, Ruby, Scarlet Ball, Snowball, Uncle Jim, Wm. Belt, Wonder, Yant.

Unfortunately, some of those which are best in quality are inferior in productiveness, hence many varieties of fine quality have been discarded, among these being Brunette, Cameronian, and Timbrell, three of the finest flavoured varieties.

VARIETIES FREEST FROM RUST.

Some varieties of strawberries are much less subject to rust or leaf blight than others, and it is important to know these kinds so that, in districts where rust is troublesome, they may be planted if they are sufficiently productive and have other necessary good characteristics. The following varieties are the freest from rust at the Experimental Farm:

FREEST FROM RUST.—Bismark, Big Bobs, Bubach, Carrie, Gibson, Greenville, Hood River, Joe, Jucunda Improved, Louis Gauthier, Marshall, Nettie, Repeater, Sampson, Success, Surprise, Tennessee Prolific, Texas.

BEST VARIETIES FOR PRESERVING.

The darker-fleshed varieties usually make the best looking preserves and are, as a rule, the most suitable for this purpose. Of the varieties recommended in the general list the best are Senator Dunlap, Warfield, Splendid, Lovett, and Ruby.

HARDEST VARIETIES.

There have been some severe winters experienced at the Central Experimental Farm during the past twenty-one years, which have made it possible to learn which varieties are the hardest. The injury to flowers from frost in spring is often considerable, as strawberry flowers are very sensitive to cold, hence it is important in some districts to know which have the hardest flower-buds. Among the hardest varieties it has been found that hardness of plant is usually correlated with hardness of flowers, although the late-blossoming sorts are less likely to suffer than the early ones. Following are some varieties which have proven hardest:

HARDEST.—Beder Wood, Lovett, Senator Dunlap, Pocon, Crescent.

NEARLY OR QUITE AS HARDY AS THOSE ABOVE.—Bismark, Steven's Late Champion, Hawaii, Abington, Howard, Luxury, Hero, Sunshine, New Globe, Jucunda Improved, Giant, Armstrong, Uncle Jim, Giant, Ruby, Carleton.

VARIETIES WITHSTANDING DROUGHT BEST.

During the strawberry season of 1908, there was one of the severest droughts ever experienced at the Central Experimental Farm. The foliage of most varieties wilted down and many leaves dried up, but some kinds showed much greater ability to withstand the drought than others. This is no doubt due, in some cases, to the ability of the foliage to withstand the hot,

dry air, and in others to a better and deeper root system. Some varieties, doubtless, had both resistant foliage and good roots. Most of those which withstood the drought best were medium to late in season, though it should be stated that in this case the early sorts have not been considered, as their fruiting season was almost over before the drought affected the crop severely. Following are the varieties in alphabetical order:

Armstrong, Barton's Eclipse, Beidler, Big Bobs, Brandywine, Buster, Commonwealth, Clyde, Daniel Boone, Dora, F. H. Ekey, Gandy, Giant, Gibson, Glen Mary, Governor Rollins, Great Ruby, Greenville, Hatch Experiment Station, Hood River, Hero, Joe, Luxury, Miller, Mrs. Cleveland, Mrs. Fisher, Mrs. Miller, Murray, Nettie, New Dominion, New Globe, Parson's Beauty, Pennell, Pocomoke, Ridgeway, Robbie, Ruby, Scarlet Ball, Seedling from C. H. Smith, Yarmouth, N. S., Steven's Late Champion, Sunnyside, Tennessee Prolific, Uncle Jim, Williams.

ENGLISH VARIETIES.

Many English varieties of strawberries have been tested at Ottawa, but they have all proved too tender to be grown commercially or even for home use. The English sorts have been originated in a climate quite different from that in most parts of Canada, hence it is not a matter of great surprise that they are too tender. The best varieties of American origin have to withstand severe winters before they are recognized as valuable sorts for general culture. In Great Britain and Ireland the plants are not subjected to such trying conditions and become popular for other reasons, hence, when they are subjected to the frosts of winter and the heat and dry weather of summer in Canada, they fail to succeed well. As a rule, English varieties make few runners and hence are not as well protected by their foliage for extremes of temperature in winter or in summer as the best American sorts. Of those which have been tested, the Champion of England, Noble, and Albert appear the hardiest. The best English varieties are better in quality than the best American berries, but some of the most profitable kinds there are not of the best quality. The average variety in England, however, is much sweeter and of higher flavour than those in Canada, but although the flavour is higher, one misses the sprightliness in some varieties which is characteristic of Canadian strawberries. The Royal Sovereign is the variety most popular in England. The Wm. Belt, Marshall, Brunette, and some others compare very favourably in quality with the best English sorts, but unfortunately they are not the most productive.

STRAWBERRIES IN COLD STORAGE.

The general impression is that strawberries will keep but a very short time, hence the following preliminary test made with twelve varieties in the summer of 1908 should prove interesting:

The fruit was picked into strawberry boxes on June 30th, and taken to the cold storage room, one box of each variety being used in the test. The air in the room was dry, with a good circulation, which accounts in a large measure for the length of time which the fruit kept, as the dry air prevented moulding. The highest temperature in the room from June 30th to July 21st was 45 degrees F., and the lowest temperature was 43 degrees F. The average temperature for the 18 days on which it was recorded, was 44 degrees F. While the fruit remained in good condition for eating for a comparatively long time, it gradually shrank in size, no doubt due to the evaporation of moisture in the dry room. While a single test of this kind made mainly to test a new storage room is not as reliable as one with more fruit, covering a number of years, it indicates how long a time straw-

berries may be kept in good condition and the possibilities of shipping long distances.

Extensive experiments have been conducted by the Department of Agriculture, Washington, and it has been found that the best temperature for keeping strawberries in cold storage is about 32 degrees Fahr.

STRAWBERRIES PLACED IN COLD STORAGE JUNE 30TH, 1908.

Variety.	Condition in July.				
	4th	7th	10th	17th	21st
Daisy	Good & dry	Fresh & dry	Some decay fairly dry.	Mouldy	
Bismark	Good & dry	Fresh & dry	Some decay fairly dry.	Mouldy, unfit for use.	
Gibson	Good & dry	Fresh & dry	Some mo'd fairly dry.	Mouldy, unfit for use.	
Greenville	Good & dry	Fresh & dry	Fair, and fairly dry.	Some mould, fairly dry, flavour good.	Mouldy, unfit for use.
Uncle Jim	Good & dry	Fresh & dry	Some decay fairly dry.	Mouldy, unfit for use.	
Buster.....	Good & dry	Fresh & dry	Fine & dry.	Dry, little mo'd little off flavor.	Some decay, unfit for use.
New Globe.....	Good & dry	Fresh & dry	Some mo'd fairly dry.	Some mould but fairly dry, flavour good.	Fairly dry, flavor gone, unfit for use.
Pride of Cumberl'd	Good & dry	Fresh & dry	Some mo'd fairly dry.	Some mould, fairly dry, flavor fairly good.	Mouldy, unfit for use.
Armstrong.....	Good & dry	Fresh & dry	Some mo'd fairly dry.	Mouldy, unfit for use.	
Hero	Good & dry	Fresh & dry	Some mo'd fairly dry.	Mouldy, unfit for use.	
Giant	Good & dry	Fresh & dry	Fine & dry.	Some mould, fairly dry, little off flavor.	Some decay, unfit for use.
Bisel.....	Good & dry	Fresh & dry	Some mo'd fairly dry.	Mouldy, unfit for use.	

CAUSES OF POORLY-SHAPED BERRIES.

There are two causes of poorly-shaped berries or nubbins. The commonest is unfavourable weather conditions. The flower and growing fruit of the strawberry are very susceptible to injury from cold winds or cold weather. Sometimes part of the berry is injured while another part being perhaps, more protected, escapes and develops as normally as it can with part of the berry injured. Another cause of poorly-shaped fruit is lack of proper pollination. The supply of pollen is either deficient in the fruit itself, or there has not been enough brought by wind and insects to pollinize all the stigmas of the berry. Extremely dry, hot weather may injure the pollen. Rainy weather during the blossoming season may cause much poorly-shaped fruit by preventing proper pollination. The remedy is to plant varieties with abundant pollen and mix these with any imperfect sorts which may be grown. Keeping the plants back as much as possible in the spring by not removing the mulch early, will help to avoid injury from cold winds and frost.

DESCRIPTIONS OF VARIETIES.

The following 120 varieties of the 590 tested during the past twenty-one years have all been described from fruit grown at the Central Experimental Farm. While few of those described are recommended for general planting, it has been thought best to describe most of those which are still under test at Ottawa as a large number of them are comparatively new and have not been fully tested, and others which have long been dropped from the nurseryman's catalogue have continued to do so well for from seventeen to twenty-one years, that the publication of the results obtained at the Central Experimental Farm may cause these varieties to be tried again by those who may have discarded them for others thought to be better. As a rule, the strawberry grower buys his plants from a nurseryman and for this reason he doubtless often loses a valuable variety by neglecting to propagate one which has given him good results, but which the nurseryman has ceased propagating, perhaps because the sale of plants of newer kind pays him better. Among these older varieties may be mentioned the Maggie, originated by the late Chas. Arnold, Paris, Ont., which has given by far the largest crop of early fruit of any kind tested at Ottawa. The Daniel Boone is a variety resembling Warfield very much, but originated before the latter variety and has proved more productive than the Warfield after nineteen years' testing from the same stock. The Daisy is a very attractive variety and one of the hardiest and most productive, exceeding the Warfield in both respects. This has been grown for 19 years from the same stock. The New Dominion, a variety originated in Canada, has been grown for twenty-one years and, while a little pale in colour, is one of the most productive late sorts. All of these varieties were highly commended by growers when they were introduced and could be planted to advantage today. It will be noticed that many of the varieties described had, as one or both of their parents, the Crescent, Wilson, or Sharpless. These three for a long time were the most prominent varieties, and, while it is doubtful if they have deteriorated much during the past twenty-five years, there have been so many kinds introduced bearing larger fruit, that they are not now planted by the best growers, but there are still some who retain these varieties believing that they give the best results with the least labour. For this reason they have been called the "lazy" man's berries. But while we must hold the Wilson and Crescent largely responsible in the past for the sacrifice of size and quality to quantity, the hardiness and productiveness of these varieties have in many instances been transmitted to their offspring, adding those desirable characteristics to the large size and good quality which the best of the more recent introductions possess.

APTON (Imp.)—Form roundish conical to pointed conical, regular; above medium size, deep red with rather prominent seeds; flesh bright red, juicy, acid, firm, medium quality; season early to medium; plant vigorous; runners numerous; foliage moderately good; rusts badly; productive and of good appearance; resembles Warfield.

ANNA KENNEDY, (Imp.)—Originated with J. T. Lovett, Little Silver, N. J., in 1884, being a cross between Crescent fertilized by Sharpless. Form roundish, above medium to medium size; bright, rather pale red, glossy, handsome; prominent seeds; bright red flesh, juicy, subacid, firm, medium quality; season medium late; plant vigorous; runners numerous; foliage moderately good; rusts slightly to considerably; a handsome berry.

ARKANSAS TRAVELLER, (per.)—Originated by Louis Hubach, Judsonia, Ark. Form roundish conical, medium size, pale red with some deep red, not coloured evenly; seeds not prominent; flesh pale, juicy, subacid, pleasant,

moderately firm, good quality; season medium; plant vigorous; runners numerous; foliage moderately good; rusts considerably to badly.

AROMA (per.)—Originated by F. W. Cruse, Kansas. Roundish conical, regular; large; calyx medium; bright scarlet, glossy; flesh bright red; seeds fairly prominent; core hard; juicy; subacid; above medium quality; medium late season; moderately firm; plant moderately vigorous, few runners, good foliage; a handsome berry; not productive.

AUGUST LUTHER, (Per.)—Originated by August Luther, near Kansas City, U. S. Form roundish conical, medium to above, bright red with rather prominent seeds; flesh bright red but not very glossy, juicy, subacid, good, moderately firm, good quality; season very early; plant moderately vigorous; runners fairly numerous; foliage medium to poor; rusts considerably to badly; one of the most promising extra early kinds but hardly vigorous enough.

BARTON'S ECLIPSE, (Imp.)—Originated by T. B. Barton, Kentucky, from a seedling of Longfellow.

Form irregular, wedge conical, large, bright red inclined to have white tip, not specially prominent seeds; flesh bright red, juicy, subacid, moderately firm, medium quality; season medium; plant vigorous; runners numerous; foliage moderately good; rusts badly. A handsome and productive variety.

BEDER WOOD (Racster), (Per.)—Originated by Beder Wood, Moline, Ill., from seed sown in 1881, and fruited in 1883. Introduced about 1890.

Form round conical, medium size, pale red, not prominent seeds; flesh pale, juicy, acid, moderately firm, medium quality; season early to extra early, plant vigorous; runners numerous; foliage moderately good; rusts considerably. Promising on account of earliness, productiveness and for being a good pollinizer.

BEVERLY, (Per.)—Originated in 1888 by Benjamin M. Smith, Beverly, Mass. A seedling of Miner's Prolific.

Irregular in shape but not imperfect, medium size, deep red, sunken and not prominent seeds; flesh pale red, meaty, juicy, subacid, good, firm, very good to good quality; medium late season; plant vigorous; runners numerous; foliage very good, but rusts considerably.

Better in quality than many other sorts. Would be an excellent berry for home use.

BIG BOBS, (Per.)—Originated by R. M. Shaw, Waterville, N. S.

Irregular roundish or wedge shaped, sometimes long, large to very large, pale and deep red, not prominent seeds; flesh pale red, meaty, juicy, subacid, pleasant, firm, of good to very good quality; season late to medium late; plant vigorous; runners medium; foliage good; rusts slightly to considerably. A large berry of good quality. Promising.

BISEL, (Imp.)—Originated by D. L. Bisel, Southern Illinois, in 1887; a seedling of Wilson.

Roundish, large, bright red, handsome with rather prominent seeds; flesh bright red, juicy, inclined to be hollow, briskly subacid, moderately firm, above medium quality; mid-season; plant vigorous; runners numerous; foliage moderately good, but rusts considerably.

Productive and handsome; one of the most attractive berries.

BISMARCK, (Per.)—Originated by Jacob C. Bauer, Judsonia, Ark. A seedling of Bubach crossed with Van Deman.

Roundish, pale, dull red, not prominent seeds; flesh pale red, juicy, subacid, good, firm, of above medium to good quality; plant moderately

vigorous; runners medium; foliage moderately good to good, rusts slightly to considerably.

A late variety of good quality.

BOMBA, (Per.)—Originated with Judge Parry, Parry, New Jersey, from seed of Crimson Cluster. Introduced by Pomona Nurseries in 1887. Roundish to pointed conical, above medium size, deep glossy red, seeds rather prominent; flesh bright, rich, red, juicy, acid, firm, of medium quality; early to medium season; plant vigorous, runners numerous; moderately good foliage, but rusts badly.

Handsome and productive. Resembles Warfield.

BOYNTON.—Resembles Crescent.

BRANDYWINE, (Per.)—Originated with E. T. Ingram, in Eastern Pennsylvania, in 1889. Introduced by M. Crawford in 1895. Supposed seedling between Glendale and Cumberland.

Roundish to sugar-loafed, above medium to large, deep, dull red, of unattractive appearance, seeds not prominent; flesh bright red, juicy, briskly subacid, good, firm, and good quality; late season; vigorous plant with medium number of runners; foliage moderately good to good; rusts slightly to considerably.

A good late variety.

BUSTER, (Imp.)—Originated by C. C. Stone, Moline, Ill. A cross between Bubach and Sharpless.

Roundish, large, bright rather pale red, not prominent seeds; flesh bright red, juicy, briskly subacid, moderately firm, of medium to above in quality; season medium late to late; plant vigorous with medium number of runners; foliage good, but rusts considerably. Very promising. As firm as Clyde and brighter red. Keeps its size well to the end of the season. Foliage is good and shades the fruit well.

BRUNETTE, (Per.)—Originated by Granville Cowing, of Indiana. Introduced in 1895.

Pointed conical or roundish, large, dark, glossy red; flesh dark red, moderately juicy, mildly subacid, moderately firm; very good quality; plants vigorous foliage; healthy.

The quality of this variety is exceptionally good.

BUBACH, (Imp.)—Originated with J. G. Bubach, Princeton, Ill.

Irregular wedge conical, very large, bright red, seeds not prominent; flesh bright red, juicy, subacid, moderately firm to firm, good quality; season medium to late; plant vigorous, runners medium number; foliage moderately good, but rusts slightly to considerably.

Very satisfactory, as a rule. Without doubt one of the finest in regard to size and appearance of fruit, productiveness and good foliage.

CAMERON, (Per.)—Introduced in 1902 by D. Brandt, Ohio.

Pointed conical, medium size, pale, rather dull red, seeds not prominent; flesh pale, juicy, briskly subacid, rather soft, of medium to above in quality; very early season; plant vigorous with many runners; foliage good, rusts slightly to considerably.

Much like Mayflower and Osceola.

CARLETON, (Imp.)—Originated at the Central Experimental Farm, Ottawa, in 1888.

Roundish to pointed or wedge conical, medium to above in size, pale red, seeds not prominent; flesh bright red, juicy, subacid, good, moderately firm and good quality; season late to medium late; plant very vigorous, many runners; foliage moderately good to good, considerable rust.

A productive variety of good quality, but not specially attractive.

CARDINAL, (Imp.)—Originated with J. S. Streator, Garrettsville, Ohio, in 1896. Introduced by The Templin Co., Calla, Ohio, in 1905. A chance seedling.

Conical, sometimes wedge shaped, medium to large in size, deep, rich red, glossy, seeds prominent; flesh bright red, juicy, briskly subacid, moderately firm and above medium quality. Plant vigorous, foliage good.

Not specially promising.

CARRIE, (Imp.) (Crescent, 1861)—Pointed or wedge conical, medium size, bright red, not prominent seeds; flesh bright red, juicy, acid, moderately firm; quality medium; season late; plant very vigorous, tall, but few runners; foliage good, rusts slightly to considerably.

Foliage very dark and healthy. A good late berry.

CLYDE, (Per.)—Originated by Dr. Stayman, Leavenworth, Kan. A seedling of Cyclone.

Roundish, large to very large, pale red, seeds not prominent; flesh pale red, juicy, subacid, pleasant, firm, and above medium in quality; season early to medium, plant vigorous with numerous runners; foliage poor to moderately good; rusts considerably.

Promising on account of its great productiveness. Suffers in dry time owing to lack of foliage.

COLE'S SEEDLING, (Per.)—Roundish, large, dull, deep red, seeds not prominent; flesh bright red, moderately juicy, subacid, moderately firm, and above medium in quality; late season; moderately vigorous, numerous runners; foliage moderately good, but rusts considerably.

Productive, but not attractive looking.

CRESCENT, (Imp.)—Originated with Wm. Parmalee, New Haven, Conn., in 1868.

Roundish and wedge conical, medium to below in size, bright red, seeds not specially prominent; flesh red, juicy, acid, firm, of medium quality; early to medium season; vigorous plant with many runners; foliage moderately good, but rusts considerably to badly.

Productiveness is its chief merit.

DAISY, (Imp.)—Originated by T. G. Zane, New Jersey. A seedling of Crescent fertilized by Cumberland.

Round conical above medium size, rather pale, bright glossy red, moderately prominent seeds; flesh bright red, juicy, inclined to watery, acid, moderately firm to soft, of medium quality; season medium late; very vigorous, runners numerous; foliage moderately good, rusts considerably.

A very attractive-looking berry and one of the most productive, but is rather soft.

DANIEL BOONIE, (Imp.)—Originated by A. D. Webb, Kentucky. Introduced by M. Crawford in 1883, after seven years' trial.

Roundish and wedge conical, large, deep but glossy red, moderately prominent seeds; flesh bright red, juicy, acid, moderately firm to rather soft, of medium quality; season early to medium; plant vigorous, runners numerous; foliage moderately good to good, but rusts considerably to badly.

Resembles Maggie and Warfield, but is more vigorous than the latter. Productive and of good appearance.

DEWEY, (Per.)—Introduced by James Nimon, Texas. A cross between Haverland and Parker Earle.

Long, pointed conical medium size, deep red, seeds not prominent;

flesh bright red, juicy, subacid, good, moderately firm, quality good to very good; season medium, moderately vigorous, but few runners; foliage moderately good, rusts considerably to badly.

A berry of good quality, but that is all specially in its favour.

DR. ARP, (Imp.)—Pointed conical, large, dull red; flesh bright red, acid, firm, of medium quality; late season; plant vigorous with moderate number of runners; foliage moderately good to poor.

DORA, (Imp.)—Received from C. C. Stone, Moline, Ill., in 1896.

Wedge and pointed conical, medium size, bright red, rather prominent seeds; flesh bright red, juicy, acid, moderately firm, of medium to above in quality; season medium late, but some fruit ripens early; vigorous, moderate number of runners; foliage good, but rusts considerably.

A productive medium to late berry.

EARLY BEAUTY.—Resembles Excelsior.

ELEANOR, (Per.)—A chance seedling found by Mr. Coombe in Atlantic County, New Jersey.

Round conical, medium size, rather deep, glossy red, seeds not prominent; flesh bright red, juicy, subacid, pleasant, moderately firm, and above medium in quality; season early; plant vigorous, large number of runners; foliage moderately good, rusts slightly to considerably.

A promising early variety, handsome and productive.

ENHANCE, (Per.)—Originated by Henry Young, Ada, Ohio. A cross between Sharpless and Windsor Chief.

Roundish or roundish conical, above medium to large, deep red, not prominent seeds; flesh bright, rich red, meaty, subacid, firm, above medium to good in quality; medium season; plant vigorous, large number of runners; foliage moderately good, rusts considerably.

A fine, productive berry.

ENORMOUS, (Imp.)—Originated by B. O. Curtis, of Illinois. A seedling of Crescent.

Wedge shaped, irregular, very large to large, bright red, glossy, seeds not specially prominent; flesh bright red, juicy, acid, moderately firm, above medium quality; medium late to late season; plant vigorous, moderate number of runners; foliage good, but rusts considerably.

One of the most productive of the very large berries.

ERNIE, (Per.)—Originated by Dr. S. Mandlin, Bridgeman, Mich., in 1895. Introduced by A. R. Weston and Co., in 1903.

Roundish conical, medium size, bright to deep red, glossy, flesh bright red, subacid, firm, of good quality; season early; plant moderately vigorous; foliage moderately good.

EXCELSIOR, (Per.)—Originated in 1890 by Louis Hubach, Judsonia, Ark., and introduced by J. J. Hoffman, Judsonia, Ark., in 1892. A cross between Wilson and Hoffman.

Roundish conical, medium to above in size, deep, glossy red, not prominent seeds; flesh bright red, juicy, briskly subacid, firm, above medium quality; season early to extra early; vigorous, runners numerous; foliage good, but rusts considerably.

Promising for earliness, appearance, firmness. About the same colour as Van Deman. One of the best early sorts. A very fine-looking extra early sort.

FAIRFIELD, (Per.)—Originated with P. Johnson, Cumberland Co., N. J. Introduced in 1902 by Stanton B. Cole, N. J.

Obtusely conical, necked, medium size, dark red; flesh red, juicy.

acid, firm, quality medium; season very early; plant moderately vigorous; foliage moderately good.

A promising early variety.

GANDY (Per.)—Introduced by J. T. Lovett, Little Silver, N. J., in 1888. A cross between Jersey Queen and Glendale.

Roundish, medium to large, rather pale, dull red, seeds not specially prominent; flesh bright red, juicy, briskly subacid, pleasant, firm, above medium to good in quality; late season; plant moderately vigorous, moderate number of runners; foliage good, rusts slightly to considerably.

A late, firm berry, but not productive here.

GRISLER, (Per.)—A chance seedling found in Michigan. Introduced in 1897.

Roundish to sugar-loaf shaped, large, bright or rather deep glossy red, rather prominent seeds; flesh bright red, juicy, subacid, pleasant, firm, of good quality; late season; plant vigorous, few runners; foliage moderately good to good; rusts slightly to considerably.

May be promising. Not very productive.

GIANT, (Per.)—Originated on the Hudson by Joseph Bailey.

Roundish to loaf shaped, large, pale red, seeds not prominent; flesh pale red, juicy, subacid, firm, above medium quality; season late; plant moderately vigorous, few runners; foliage moderately good, rusts considerably.

One of the largest and most productive really late berries.

GLEN MARY, (Per.)—Originated by Mr. Jugham, West Chester, Pa. Introduced by W. F. Allen, jr., in 1896.

Irregular, roundish to wedge conical, very large to large, deep red at base becoming pale towards tip, seeds not prominent; flesh bright red, juicy, rather watery; subacid, firm, of medium quality, medium season, moderately vigorous, runners numerous; foliage moderately good to good; rusts considerably.

A good cropper and keeps its size well to the end of the season.

GRANVILLE, (Per.)—Originated by A. M. Nichol, Granville, Ohio, and introduced by him in 1902.

Roundish, medium to large, deep, glossy red, seeds not prominent; flesh rich red, moderately juicy, subacid, good, firm, very good quality; season medium late; moderately vigorous, but few runners; foliage moderately good, rusts considerably.

GREENVILLE, (Imp.)—Originated by E. M. Buechly, Greenville, O., in 1883. Introduced in 1893.

Roundish to wedge shaped, large to very large, bright red; flesh bright red, juicy, subacid, pleasant, moderately firm to rather soft, good quality; vigorous, runners numerous; foliage good, rusts slightly to considerably.

A very productive berry.

HAVERLAND, (Imp.)—Originated in 1882 by B. H. Haverland, near Cincinnati, Ohio, and introduced in 1887.

Irregular, long, pointed and wedge conical and roundish, above medium size, bright, rather pale, red, rather prominent seeds; flesh pale red, juicy, subacid, moderately firm, above medium quality; early to mid season; vigorous, moderate number of runners; foliage moderately good, rusts considerably.

Rather too pale to be especially attractive.

HAWAII, (Per.)—Originated in 1896 by E. W. Wooster, of Maine. A cross between Haverland and Parker Earle.

Long pointed conical, medium size, rather pale, glossy red, seeds not prominent; flesh red, juicy, subacid, good flavour, soft, of good quality; season early to extra early; very vigorous, large number of runners; foliage good, rusts considerably.

Seems rather productive for an early berry. Is more attractive in colour than Osceola or Mayflower.

HERO, (Per.)—Introduced in 1900.

Flattened wedge conical, large, bright, to rather pale, glossy red, prominent seeds; flesh bright red, juicy, briskly subacid to acid, moderately firm, above medium in quality; season early to medium; vigorous, not many runners; foliage moderately good to good, considerable rust.

Rather promising.

HOOD RIVER, (Per.)—Irregular, wedge conical, large to very large, bright red, seeds not prominent; flesh bright red, juicy, subacid, moderately firm, above medium quality; medium season; vigorous, large number of runners; foliage moderately good to good, rusts slightly to considerably.

A handsome berry, much resembling Bubach. Promising.

HOWARDS, No. 41, (Imp.)—Round or pointed conical, medium size, deep red, prominent seeds; flesh bright red, juicy, acid or briskly subacid, firm, medium to above medium in quality; season medium to late; very vigorous, moderate number of runners; foliage moderately good to good, rusts considerably.

A productive and promising late berry.

HATCH EXPERIMENT STATION, (Imp.)—Originated at Hatch Experiment Station, Amherst, Mas

Roundish or loaf . . . large, pale red, darker towards base; bright flesh, moderately juicy, . . . acid, firm, quality above medium to good; late season; moderately vigorous, fair number of runners; foliage moderately good, considerable rust.

A good late sort.

IRENE, (Imp.)—Roundish or pointed conical, medium size, bright, very glossy red, rather prominent seeds; flesh bright red, juicy, briskly subacid, firm, above medium quality; season early to medium; vigorous, moderate number of runners; foliage moderately good, rusts slightly to considerably.

A very attractive, handsome berry.

JESSIE.—Originated with F. W. Loudon, Janesville, Wis., in 1880. A chance seedling of Sharpless.

Roundish irregular, medium to very large, deep red, inclined to have white tip, seeds not prominent; flesh bright red, juicy, subacid, good flavour, firm, good quality; medium to late season; vigorous, few runners; foliage moderately good to good, rusts slightly to considerably.

Discarded, not productive enough.

JOE, (Per.)—Originated by Jos. H. Black, Son and Co., Hightown, N. J. A seedling of Chairs crossed with Sharpless, was crossed with Gandy. Joe was the result. Fruited first in 1893. Introduced in 1899.

Roundish, large, bright, glossy red, prominent seeds; flesh bright red, juicy, briskly subacid, firm, above medium quality; late season; very vigorous, runners numerous; foliage good, rusts slightly.

Productive. Fruit large, handsome and shapely. Should be a good shipper. One of the most promising late berries yet tested.

JOHN LITTLE.—Resembles Crescent.

JOHNSON'S EARLY, (Per.)—Originated in Maryland. A cross between Crescent and Hoffman.

Irregular, pointed and wedge conical, medium to above medium in size, bright red, juicy, seeds not prominent; flesh bright red, juicy, briskly subacid, moderately firm to firm, quality above medium to good; season early; vigorous, runners numerous; foliage good, rusts slightly to considerably.

One of the largest early sorts. Not one of the earliest.

JUCUNDA IMPROVED, (Per.)—Originated by A. B. Gerbert, of Eastern Pennsylvania. Believed to be a seedling of Jucunda.

Roundish to pointed conical, above medium to large, deep red; flesh bright red, juicy, subacid, good, firm, quality good to very good; vigorous, low growing, runners numerous; foliage moderately good, rusts slightly to considerably.

A good berry for home use on a count of quality.

KANSAS, (Imp.)—Originated by J. I. Whittman, Emporia, Kan., in 1899. Introduced by W. F. Allan, Salisbury, Md., in 1900.

Roundish, medium size, bright red; flesh bright red, juicy, acid, firm, medium quality; vigorous, moderate number of runners; foliage moderately good to good, rusts slightly to considerably. A productive sort.

KITTIE RICE, (Imp.)—Originated by J. F. Beaver, Dayton, Ohio.

Roundish conical, regular; above medium to large, deep rich red; flesh rich red, juicy, good flavour, subacid; good quality; seeds prominent; season medium; moderately firm to firm. Plants moderately vigorous, few runners this year; foliage medium.

A very handsome berry of good quality.

KYLE, (Per.)—Originated in Michigan. Introduced about 1898.

Roundish, large, pale red; not prominent seeds, juicy, subacid, moderately firm to rather soft, above medium quality; medium to late season; very vigorous, large number of runners; foliage good, rusts considerably.

LATEST, (Imp.)—Originated by S. H. Warren, Weston, Massachusetts, in 1895, and introduced by him in 1900. A cross between Jewell and Belmont.

Wedge conical, medium to large size, deep red, seeds not prominent; flesh bright red, subacid, good, moderately firm, good quality; late season; vigorous, few runners; foliage moderately good, rusts considerably.

LOUIS GAUTHIER, (Per.)—Originated in France.

Roundish to wedge conical, above medium to large in size, very pale red, almost white, prominent seeds; flesh white, juicy, briskly subacid, soft above medium to good quality; late season; vigorous, but few runners; foliage moderately good to good, rusts slightly to considerably.

A very late berry, but the colour, though odd, is against it.

LOUIS HUBACH, (Imp.)—A cross between Warfield and Lady Thompson, of Arkansas origin.

Roundish conical, small to medium in size, dark crimson; flesh bright red, fairly juicy, acid, fairly firm, of medium quality; moderately vigorous, considerable number of runners.

LOVETT, (Per.)—Originated in Kentucky by J. H. Morris, in 1885. Introduced by J. T. Lovett, Little Silver, N. J., in 1890. A cross between Crescent and Wilson.

Pointed to wedge conical, above medium size, bright red, glossy; flesh bright red, juicy, acid, moderately firm, and above medium in quality; season early to medium; vigorous, few runners; poor to moderately good foliage, rusts considerably to badly.

An attractive productive berry.

LUCAS, (Per.)—Conical, sometimes wedge shaped, medium size, dark red, glossy; flesh bright red, moderately juicy, briskly subacid, moderately firm, of medium quality; plant vigorous; foliage moderately good, considerable rust.

Not specially promising.

LUXURY, (Per.)—Originated by Edwin H. Riehl, of Illinois. A cross between Brandywine and Williams. Introduced in 1901.

Irregular, wedge conical, medium size, dark red, not prominent seeds; flesh rich, red, juicy, subacid, very good, rich flavour, firm, of very good quality; mid-season; not very vigorous, few runners; foliage moderately good, rusts considerably.

A delicious berry, but not very productive.

LYON, (Imp.)—Originated by L. W. Hardy, Michigan, and introduced by him in 1901. A seedling of Bubach.

Long, pointed or wedge conical, medium size, above in size, deep red, rather prominent seeds; flesh bright red, juicy, briskly subacid, pleasant, moderately firm, of good quality; season very early; vigorous, but few runners; foliage moderately good, rusts considerably.

A promising very early variety, as it appears to be a good cropper.

MAGGIE, (Per.)—Originated by Charles Arnold, Paris, Ont. A cross between Wilson and Dr. Nicaise.

Wedge conical, deep red, prominent seeds; flesh a bright red, juicy, subacid, good, firm or moderately firm, of good quality; season early; plant vigorous, few runners; foliage moderately good to good, rusts considerably.

A productive early sort resembling Daniel Boone.

MARIE, (Imp.)—Originated by W. N. Scarff, of Ohio, in 1892. Introduced in 1901. A cross between Crescent and Cumberland.

Roundish, large, glossy but rather pale red, attractive, seeds not prominent; flesh pale red, juicy, briskly subacid, moderately firm to rather soft, of medium quality; medium to late season, vigorous, few runners; foliage moderately good, rusts considerably.

Looks somewhat like Buster. Keeps its size well. Productive, promising.

MARK HANNA, (Imp.)—Introduced by M. T. Thompson, Rio Vista, Virginia, in 1902. A seedling of Bubach. Originated by Mr. Thompson in 1898.

Irregular pointed and wedge conical in form, large, bright red, seeds sunken; flesh bright red, juicy, subacid, fairly firm, of medium quality; early season, vigorous; foliage moderately good, rusts slightly.

MARSHALL, (Per.)—Originated with M. F. Ewell, Marshfield Hills, Mass., in 1890, and introduced in 1893. A chance seedling.

Pointed conical to roundish, large to very large, dark red, rather prominent seeds; flesh bright red, rich, juicy, subacid, good, firm, of very good quality; season medium; plant moderately vigorous, runners fairly numerous; foliage good, rusts slightly to considerably.

Not productive, but large and handsome and of the best quality. Tender in flower bud.

MAXIMUS, (Per.)—Pointed conical, large to very large, deep red, pale towards tip, but not always so, seeds not prominent; flesh pale red, moderately juicy, mildly subacid good flavour, firm, of good quality, medium to late season; plant vigorous, large number of runners; foliage good, rusts considerably.

A promising berry for home use.

MAYFLOWER, (Per.)—Pointed conical or obtusely conical, medium to below medium in size, seeds not prominent, bright, pale red; flesh pale, juicy, acid, rather soft, of medium quality; extra early season; vigorous, large number of runners; foliage good, rusts considerably.

Resembles Michel's Early very much, but is better. One of the best early varieties.

MELE, (Imp.)—Originated by A. G. Griesa, Kansas.

Roundish to pointed conical, above medium to large, pale, glossy red, seeds not prominent; flesh pale red, juicy, acid, soft, of medium quality; early to medium season; plant vigorous, few runners; foliage moderately good, rusts slightly to considerably.

Although rather pale it is quite attractive. It is very productive.

MICHEL'S EARLY, (Per.)—Originated with J. G. Michel, Judsonia, Ark., in 1883. Introduced in 1889.

Fruit pointed conical, medium to below in size; seeds not prominent; dull, pale red; pale flesh, juicy, acid, subacid when dead ripe; rather soft; medium quality; extra early season; moderately vigorous; foliage moderately good; rusts slightly to considerably.

Not as productive nor as vigorous as Osceola and Mayflower, which it very much resembles.

MILLER, (Per.)—Originated by J. D. Miller, Holmes Co., O. Introduced by M. Crawford in 1900.

Fruit obtusely conical to roundish, seeds not prominent; light to rather pale red, glossy; pale flesh, juicy, subacid, good flavour, good quality; firm; late season; vigorous, runners fairly numerous; foliage moderately good to good; considerable rust.

Not very productive.

MINUTE MAN, (Imp.)—Introduced by Geo. F. Wheeler, Mass, 1901.

Fruit pointed conical, regular; above medium to large in size; seeds not prominent; rich glossy red; flesh bright red, juicy to moderately juicy, briskly subacid, pleasant, above medium to good in quality, moderately firm to soft; season early to medium; plant vigorous, but few runners; foliage moderately good to good; considerably.

Rather promising. Appears fine. Handsome.

MONITOR, (Per.)—Originated with Z. T. Russell, Carthage, Missouri, in 1893. Introduced in 1900 by Dr. Beal, of Missouri.

Fruit roundish; medium size; pale red; seeds not prominent; flesh pale red, juicy, subacid, mild, moderately firm, above medium quality; season medium to late; plant fairly vigorous, moderate number of runners; foliage moderately healthy, rusts slightly to considerably.

Not specially promising.

MORGAN'S FAVORITE, (Per.)—Said to be a cross between Triumph de Grand and Sharpless.

Pointed conical; large to very large; deep, rather dull red; seeds not prominent; flesh bright red, moderately juicy, tender, mildly subacid, good flavour, firm; quality good; season medium to late; plant very vigorous; large number of runners; foliage good to very good, slightly to considerably rusted.

Lacks juiciness to make a good dessert berry, but is a good variety.

MURRAY.—Originated by A. M. Smith, St. Catharines, Ont.

Rather irregular, wedge or conical; large, scarlet; medium to rather prominent seeds; flesh bright red, juicy, subacid, good flavour; firm; quality good; medium late season; plant vigorous; foliage healthy and good.

Would be promising if more regular in shape. Evidently a productive berry.

NEW GLOBE, (Per.)—Originated by Eugene Sutherland in 1898 and introduced in 1901.

Obtusely conical to roundish; large to very large; dull, rather pale red; seeds medium; flesh bright red; juicy, acid or briskly subacid, pleasant flavour; medium to good quality; firm; medium to late season; plant vigorous; foliage healthy.

A productive, large, late sort. Rather promising.

NETTIE, (Imp.)—Originated by Jos. H. Black, Son & Co., in 1893, and introduced in 1900.

A cross between Bubach and Yale, was crossed with Sharpless; this cross was re-crossed with Gandy, and Nettie was the result.

Fruit pointed to wedge conical; large, dull, pale red; seeds not prominent; flesh bright red, juicy, tender, briskly subacid, firm; above medium quality; season very late; plant vigorous, makes few runners; foliage good, rusts slightly to considerably.

A very late berry, but not specially promising.

NEW DOMINION, (Per.)—Originated by C. N. Biggar, Lundy's Lane, Ontario, in 1873.

Fruit roundish; medium to above medium size; pale red, seeds not prominent; flesh bright, pale red, juicy, tender, subacid, moderately firm; above medium quality; season late; plant vigorous, large number of runners; foliage moderately good to good, but rusts considerably.

A good late berry.

NO NAME, (Per.)—Fruit wedge conical; large; deep red, inclined to have white tips, seeds not prominent; flesh bright red, juicy, tender, acid, firm; medium quality; season medium, plant vigorous with large number of runners; foliage moderately hearty; rusts slightly to considerably.

A large, handsome, productive berry.

OOM PAUL, (Per.)—Originated by J. S. Palmer. Introduced by T. C. Kevitt, of New Jersey, in 1903. A cross between Jessie and Bubach.

Fruit wedge shape or obtuse conical; medium large; deep or dark red; seeds not prominent; flesh rich red, juicy, tender, briskly subacid, firm; above medium to good in quality; medium late season; plant moderately vigorous; foliage good, rusts considerably.

ORANGE COUNTY, (Imp.)—Introduced by H. S. Timbrell, Unionville, Orange Co., N. Y.

Fruit roundish, large, pale red, prominent seeds; flesh pale red, juicy, tender, subacid, pleasant, firm; quality good; medium late season; plant moderately vigorous, fair number of runners; foliage moderately good; rusts considerably.

OSCEOLA, (Per.)—Introduced by the Osceola Park Nursery Co., Mo., in 1889. Believed by many persons to be the same as Michel's Early.

Fruit pointed conical, medium size, pale, dull red, seeds not prominent; flesh pale, juicy, tender, acid except when very ripe, when it is sweet acid, rather soft; quality medium to above; season extra early; plant vigorous, large number of runners; foliage good, rusts considerably.

Resembles Michel's Early, but is a better cropper.

PARSON'S BEAUTY, (Per.)—Introduced in 1899. Originated in Maryland about 1891.

Fruit obtusely conical, above medium to large in size, bright red, glossy, prominent seeds; flesh bright red, juicy, tender, subacid, firm;

above medium quality; season medium late; plant vigorous, large number of runners; foliage moderately good, rusts slightly to considerably.

A handsome, productive variety.

PENNELL, (Per.)—Originated by John W. Pennell, Conn. Introduced by M. Crawford in 1900.

Fruit roundish to loaf shaped, large, deep, dull red, seeds not prominent; flesh bright red, juicy, tender, subacid, good, firm; quality good; season medium late; plant vigorous, large number of runners; foliage moderately good, rusts slightly to considerably.

Of good size and quality. A good berry for home use. Doubtful if productive enough for market.

REPEATER, (Per.)—From W. N. Scharff, New Carlisle, Ohio, Fruit pointed conical, medium to above in size, deep red, glossy, prominent seeds; flesh bright red, juicy, tender, subacid, moderately firm to soft; quality medium; medium season; plant moderately vigorous, medium number of runners; foliage moderately good, rusts slightly.

Not specially promising. A low-growing variety. Not enough foliage. Appears productive.

POCOMOKE, (Per.)—Originated near Pocomoke River. A chance seedling.

Fruit obtusely conical, large to very large, bright glossy red inclined to have white tips, seeds rather prominent; flesh bright red, juicy, tender, briskly subacid, very firm; above medium quality; season medium late; plant vigorous, large number of runners; foliage moderately good, rusts considerably to badly.

Quite promising as a productive berry for shipping.

RIDGEWAY, (Per.)—Originated by M. H. Ridgeway, Wabash, Ind., who introduced it in 1897.

Fruit roundish to loaf shaped, medium to large, bright rich red, glossy, seeds rather prominent; flesh bright red, juicy, tender, subacid, good flavour, firm; quality good; season late; plants vigorous, fair number of runners; foliage healthy, rusts slightly to considerably.

A handsome late berry of good quality.

ROBBIE, (Per.)—Originated by Jos. H. Black, Son & Co., N. J. A cross between Shuster's Gem and Kentucky was crossed with Gandy; Robbie was the result. Introduced in 1900.

Fruit roundish to wedge shaped, medium to large in size, pale glossy red, seeds not prominent; flesh pale red, juicy, soft, subacid firm; quality above medium; season very late; plants moderately vigorous, few runners; foliage moderately good, rusts slightly to considerably.

Somewhat like Nettie.

RUBY, (Per.)—Originated by E. H. Riehl, North Alton, Ill., in 1890, and introduced by him in 1895. Probably Crescent fertilized by Sharpless.

Obtusely conical; medium to above in size; deep scarlet; seeds medium; flesh rich red, juicy, subacid, good flavour; quality good; medium late season; firm; plant vigorous; numerous runners; foliage healthy.

A productive rather late sort of good quality. Promising for home use.

SAMPLE, (Imp.)—Found growing in an old bed of Leader in 1894, by J. D. Gowing, of Mass. Introduced in 1898 by C. S. Pratt, Reading, Mass.

Fruit pointed conical, very regular in shape; above medium to large, bright or rather deep glossy red, seeds fairly prominent; flesh bright red, juicy, almost watery, subacid, moderately firm; medium quality; season

medium to late; plants vigorous, large number of runners; foliage moderately good to good, rusts considerably.

Handsome and productive.

SAMPSON, (Per.)—Originated by P. J. Miller, Central Ohio.

Fruit long, pointed or wedge conical, above medium to large in size, pale red, seeds not prominent; flesh pale, meaty, juicy, tender, briskly subacid, very firm; medium to above in quality; late season; plants vigorous, large number of runners; foliage good, rusts slightly to considerably.

One of the most promising productive late berries for shipping. Is not attractive enough for near market.

SATISFACTION, (Per.)—Originated by G. W. Howard, Stevensville, Mich. A seedling of Wilson.

Fruit roundish, above medium size, bright red, glossy, rather prominent seeds; flesh bright red, juicy, tender, briskly subacid, moderately firm; good quality; medium season; plant vigorous, fair number of runners; foliage moderately good, rusts badly.

An attractive berry of good quality.

SAUNDERS, (Per.)—Originated by John Little, Granton, Ont.

Fruit pointed to wedge conical, above medium size, rather deep red, sometimes white tipped; seeds prominent; flesh rich red, juicy, tender, subacid, moderately firm to firm; medium to above medium quality; season late; plants moderately vigorous; foliage good.

Keeps size well, but not very productive.

SCARLET BALL, (Imp.)—Fruit roundish, above medium to large, pale red towards tip, darker towards base, seeds not prominent; flesh pale red, juicy, tender, subacid, good, firm; quality very good; late season; plants vigorous, few runners; foliage good, rusts slightly to considerably.

A good late berry for home use.

SEAFORD (Lloyd's Favorite), Lloyd, (Imp.)—Originated in Sussex Co., Delaware, with a Mr. Lloyd. Introduced about 1898.

Fruit wedge to obtusely conical, above medium to large, rather prominent seeds; flesh bright red, juicy, acid or briskly subacid, firm; quality above medium to good; plants vigorous, fair number of runners; foliage good, rusts considerably.

Promising on account of firmness, productiveness, and appearance.

SENATOR DUNLAP, (Per.)—Originated by J. R. Reasoner, Urbana, Illinois, about 1890. Named in 1899, and introduced by M. Crawford in 1900.

Fruit pointed, wedge and long wedge conical-necked, medium to large in size, deep, glossy red, seeds not especially prominent; flesh rich red, juicy, tender, briskly subacid, moderately firm; above medium quality; season early; plants vigorous, large number of runners; foliage moderately good, rusts considerably.

Handsome and productive.

SHERMAN, (Per.)—Fruit roundish to loaf shaped, above medium size, bright red, glossy, seeds not prominent; flesh bright red, juicy, tender, acid or briskly subacid, firm; above medium quality; plants vigorous, fair number of runners; foliage good, rusts considerably.

A very attractive looking berry and a good cropper.

SNOWBALL, (Per.)—Originated by E. W. Cone, Menominee, Wis., in 1890.

Fruit roundish, irregular, large, bright red, glossy, very attractive; seeds not prominent; flesh pale red, juicy, tender, subacid, good, soft; very

good quality; medium late season; plants vigorous, few runners; foliage moderately good, rusts slightly to considerably.

A very attractive berry and would make a good one for home use on account of quality. Softness is against it.

SPLENDID, (Per.)—From C. H. Sumner, Sterling, Ill.

Fruit roundish, medium to large, deep red, seeds not prominent; flesh red, juicy, acid, moderately firm; above medium quality; early to medium season; plants vigorous, numerous runners; foliage moderately good, rusts considerably to badly.

A productive early variety.

SPRINGDALE BEAUTY, (Per.)—Originated in Arkansas; supposed to be a cross between Crescent and Wilson. Introduced about 1901.

Fruit obtusely conical to roundish, medium to above in size, bright, attractive red; flesh pale red, juicy, subacid, rather soft; good quality; plants vigorous.

A very handsome variety, but has not done well here.

STEVENS' EARLY, (Imp.)—Fruit round, pointed or wedge conical, above medium size, bright inclined to deep glossy red; flesh rich, bright red, juicy, acid, firm; medium quality; early season; plants vigorous, runners numerous; foliage moderately good, rusts badly.

Productive, and berry is of attractive appearance. Promising. Resembles Warfield.

SUCCESS, (Per.)—Fruit roundish, somewhat irregular, above medium size, bright red, prominent seeds; flesh bright red, juicy, briskly subacid, moderately firm; medium quality; medium late season; plants vigorous, low-growing, large number of runners; foliage moderately good to good, rusts slightly.

Appears quite productive. Resembles Splendid somewhat.

SUPERIOR, (Per.)—From E. W. Townsend, Salisbury, Md. Fruit irregular, roundish pointed and wedge conical; medium to above medium size, deep red, prominent seeds; flesh bright red, juicy, briskly subacid, firm; good quality; early season; plants moderately vigorous, fair number of runners; foliage medium, rusts considerably.

Quite a promising extra early sort.

SUTHERLAND, (Imp.)—Originated by Eugene Sutherland, of New York. A seedling of Bubach.

Fruit roundish conical, small to medium in size, bright, glossy red, seeds not prominent, flesh pale red, juicy, subacid, moderately firm; above medium to good in quality; medium to late season; few runners; foliage moderately good, rusts slightly to considerably.

SWINDLE, (Per.)—Originated by W. Smalley, Vermont. Introduced by S. H. Hale, South Glastonbury, Conn., in 1892. A seedling of Jersey Queen.

Fruit irregular, medium to above in size, bright red, not prominent seeds; flesh bright red, juicy, acid, very firm; above medium quality; late season; plants vigorous, large number of runners; foliage moderately good, rusts badly.

Promising on account of lateness, productiveness and firmness.

SURPRISE, (Per.)—Fruit round and wedge conical, above medium to large, rather pale red, not prominent seeds; flesh bright red, juicy, subacid, good flavour, firm; good quality; medium late season; plants vigorous, large number of runners; foliage moderately good to good, rusts slightly.

Not vigorous nor productive enough.

TENNESSEE PACIFIC, (Per.)—Introduced by T. H. Hood and Co., Richmond, Va. A cross between Crescent and Sharpless.

Fruit wedge shaped, flattened, rather irregular; above medium to large; bright red, glossy, seeds not prominent; flesh bright red, juicy, subacid, moderately firm; above medium quality; season medium late; plants vigorous, large number of runners; foliage moderately good to good, rusts slightly.

A very attractive berry; productive.

THOMPSON'S LATE, (Imp.)—Fruit pointed conical, medium size, deep red; flesh bright red, juicy, acid, firm; medium quality; late season; plants vigorous, large number of runners; foliage good, rusts considerably.

A productive late sort

TIMBRELL, (Imp.)—Originated by H. S. Timbrell, Unionville, N. Y. Introduced in 1893.

Fruit pointed conical, large, dull red, deep, discolours easily, seeds not prominent; flesh deep red, juicy, subacid, fine flavour, firm; very good quality; late to very late season; plants vigorous, few runners; foliage moderately good, considerable rust.

Of especially fine quality, but not productive.

TWILIGHT, (Per.)—Fruit pointed conical, sometimes wedge shaped, medium to above medium size, bright red, seeds not prominent; flesh bright red, juicy, subacid, good, firm; good quality; medium late season; plants vigorous, fair number of runners; foliage good to very good, rust slight to considerable.

Not very productive.

UNCLE JIM, (Per.)—Originated by J. F. Dornan, Glenn, Mich. A chance seedling found in 1898. Introduced by Flansburgh and Pierson in 1901.

Fruit roundish to obtuse conical, sometimes wedge shaped; large, bright red; seeds not prominent; flesh bright red, juicy, subacid, good, moderately firm; good to very good quality; medium late to late season; plants vigorous, few runners; foliage good, slight to considerable rust.

Promising, but not one of the most productive.

VAN DEMAN, (Per.)—Originated early in the 80's by J. C. Bauer, Judsonia, Ark. A cross between Crescent and Capt. Jack. Introduced in 1892 by Cleveland Nursery Co., Rio Vista, Va.

Round conical, above medium size, bright glossy red, moderately prominent seeds; flesh red, juicy, subacid, moderately firm to firm; quality above medium; season early to extra early; plants vigorous, fair number of runners; foliage moderately good, considerable rust.

One of the handsomest early berries. Lacks productiveness, but keeps its size well through picking season.

WARFIELD, (No. 2.) (Imp.)—Originated with B. C. Warfield, Sandoval, Ill. A supposed cross between Crescent and Wilson.

Pointed conical, medium to above medium size, deep red, glossy, rather prominent seeds; flesh deep red, juicy, acid, moderately firm; medium quality; early to medium season; plants vigorous, large number of runners; foliage moderately good, rusts considerably to badly. A handsome berry and a good cropper.

WILLIAMS (Prince of Orange), (Per.)—Originated with Mr. Williams, Burford, Ont. A cross between Crescent and Sharpless. Introduced by Daniel Greig, Cainsville, Ont., in 1891.

Wedge conical large, bright rather deep red with a white tip, rather

prominent seeds; flesh bright red, juicy, subacid, good flavour, firm; quality good; medium season; plants vigorous, large number of runners; foliage moderately good, but considerable rust.

One of the best varieties for distant market.

WM. BELT, (Per.)—Originated by Wm. Belt, Williamsburg, Ohio. Introduced by M. Crawford in 1895, after six years' trial.

Irregular, first fruit wedge shaped, others wedge and pointed conical, large, bright red, seeds fairly prominent; flesh bright red, meaty, juicy, subacid, good flavour, firm; very good quality; season late; plants vigorous, with a large number of runners; foliage moderately good to good, but rusts considerably to badly.

One of the best-flavoured berries grown. Uncertain as to productiveness, some years doing well, and other years not very well.

WILSON, (Albany). (Per.)—Originated with John Wilson, Albany. N. Y., in 1857.

Roundish to pointed conical, medium size, deep red, seeds prominent; flesh deep red, juicy, acid, very firm; medium quality; season early; plants vigorous, few runners; foliage healthy, rusts considerably.

Too small for best. Once a very popular variety.

WINNIE WARFIELD, (Imp.)—Wedge or roundish conical, above medium to large, bright red or rather pale red, glossy, seeds rather prominent; flesh bright red, juicy, acid but pleasant, moderately firm; above medium quality, medium to late season; plants vigorous, large number of runners; foliage healthy, considerable rust.

A handsome, productive variety.

WONDER, (Per.)—Originated by S. A. Sampsel, Sandusky Co., Ohio.

Conical, large, rather dull, deep red; flesh rich red; seeds dark; juicy, subacid, good flavour; very good quality; firm; medium late season; plant vigorous; runners medium; good foliage.

A berry of fine quality. Only fairly productive.

WONDERFUL, (Imp.)—Irregular, roundish or flattened, large, bright red, rather prominent seeds; flesh bright red, juicy, acid, firm; above medium quality; season late, some ripened before medium late; plants very vigorous, moderate number of runners; foliage healthy, considerable rust.

A productive late variety.

WORLD'S CHAMPION, (Per.) Roundish, medium to above medium size, deep dull red inclined to have white tip, seeds rather prominent; flesh bright red, juicy, subacid, good flavour, moderately firm; good quality; season medium late; plants vigorous, large number of runners; foliage healthy, rusts considerably.

A good cropper.

YANT, (Per.)—Originated by John Yant in 1896. A chance seedling. Introduced in 1901 by H. M. Martin, Stark Co., Ohio.

Obtuse to wedge conical, above medium to large, deep red, not prominent seeds; flesh rich red, juicy, subacid, good flavour, firm; quality good to very good; medium late season; plants vigorous, few runners; foliage good, rusts slightly to considerably.

Promising for home use. Appears moderately productive.

INSECTS AND DISEASES AFFECTING THE STRAWBERRY.

There are comparatively few insects and diseases which cause serious injury to the strawberry and in this bulletin, only the most important are described. The information in regard to insects has been taken mainly from the reports and other publications of the late Dr. James Fletcher, formerly Entomologist and Botanist of the Experimental Farms.

WHITE GRUB. (*Lachnosterna fusca*, Frol.)

The white grub often does much damage in strawberry plantations and sometimes gives fruit-growers a great deal of trouble. If, however, the life-history of the insect is known and proper methods followed, it may be controlled. In brief, the method recommended by the late Dr. James Fletcher, Entomologist and Botanist to the Dominion Experimental Farms, is to take only one crop of fruit from a plantation and then plough it up, thus preventing the insect from passing through all its stages and so destroying it. Land for strawberries should be prepared by growing some crop that the white grub will not touch, and thus offering no inducement for them to stay in the soil.

As the growing of other crops which the white grubs are fond of, near the strawberries may be the means of introducing them to the strawberry plantation, the following description of the life-history of this insect and the general remedies suggested are given. These are taken from Bulletin 52, "Insects Injurious to Grain and Fodder Crops and Vegetables," by Dr. James Fletcher:

"White Grubs are the larvae of the May Beetles or June Bugs, so-called from their great abundance in May and June, when they may be found in large numbers flying around trees and bushes, showing particular preference for certain kinds, as willows, oaks, ashes, plums, maples and lilacs. The eggs are deposited in the ground, one to three inches below the surface, and hatch in from ten to eighteen days. The larvae feed on roots during the remainder of the season and burrow very deeply into the ground as winter approaches, returning again the following spring and doing a great deal of harm by eating the roots of grasses and many other kinds of plants, particularly corn and potatoes, their injuries being most noticeable in the second year after sod has been ploughed down. It is claimed by Dr. S. A. Forbes that a second winter and summer is passed as a larva and that the grubs do not change to pupae till June and July of the third season, the perfect beetles issuing from the pupae two or three weeks afterwards, but passing the third winter in the pupal cells and emerging the following June. Thus three full years are consumed from the time the eggs are laid until the perfect beetles appear."

STRAWBERRY WEEVIL: (*Anthonomus signatus*, Say).

The Strawberry Weevil frequently does much harm by cutting off the flower buds, the stem being severed close to the bud. The grub of this insect feeds on the pollen of the flowers and after the female has laid an egg in the bud she cuts the latter off so that it may not develop. The unopened bud falls to the ground and the grub of the weevil develops inside it. There is only one brood of this insect in the year. The beetles appear in August and then hide away beneath moss or among bushes and remain in a lethargic condition until the following spring. The varieties of strawberries chosen by the female for egg-laying are those which produce much pollen, as it is chiefly upon that part of the flower that the grubs feed. Var

eties of strawberries which are bearers of pistillate flowers only, are not attacked; consequently when the strawberry weevil is abundant, growers will do well to plant a large proportion of pistillate sorts only, using enough plants of perfect flowering sorts as will ensure the proper fertilisation of the fruit.

As the Strawberry Weevil passes the winter in the mature beetle form, and flies to the strawberry buds just before the flowers unfold, when the work of the weevil is noticed in spring, it would be well, where it is practicable, to cover the rows of perfect-flowering plants with cheese-cloth until the flowers are well opened. Trapping the beetles, it is claimed, has produced good results. For this purpose, pollen-bearing plants should be planted in rows near the bearing beds, and, when these are found to be covered with the beetles, the plants may be sprayed with the whale-oil soap solution, one pound in five gallons of water, or with the kerosene emulsion.

STRAWBERRY LEAF-ROLLER (*Phoxopterus comptana*, Froh.)

The Strawberry Leaf-roller has not proved very troublesome in Canada, but, occasionally, it does considerable injury.

The caterpillars of this insect fold the leaves of the strawberry by drawing the upper surfaces together and fastening them with strands of silk. They then eat away all the green inner surface of the leaves, giving the beds a brown and seared appearance. The first brood of caterpillars is found during the month of June, when most of the injury is done. There is a second brood in autumn. The caterpillars when full grown are about one-third of an inch long and vary in colour from yellowish-brown to dark brown or green. The first brood turns into chrysalids in late June or in early July and soon hatches into moths which lay their eggs for the second brood in late July. The larvae of this second brood hatch and attack the strawberry leaves in late summer and early autumn. By the end of September, the insect is again in the chrysalis stage in which it passes the winter.

REMEDY.—Spray with Paris green 4 ozs. to 40 gallons of water or with arsenate of lead 3 lbs. to 40 gallons of water, before the leaves become folded. Several applications are necessary, as new leaves are appearing all the time and the hatching season of the eggs extends over a considerable period. Spraying should not be done while the plants are in full bloom, nor after the fruit has formed. If a bed becomes infested, the foliage should be burned, or raked off and burned immediately after the crop is harvested.

CUT-WORMS.

Cut-worms sometimes do much injury in the strawberry plantation, especially the climbing species. They do their destructive work at night and though the injury to the leaves or roots is apparent in the morning, the cut-worms have disappeared. They may usually be found secreted in the surface soil not far away from the plants they have injured.

REMEDY.—Where either the climbing or non-climbing species is troublesome, or where injury is done to either leaves or roots, the most effective remedy is poisoning with a mixture of bran and Paris green, in the proportion of one-half pound of Paris green to 50 pounds of bran. The bran is slightly moistened before the Paris green is added so that the latter will mix better with it. This poisoned bran, of which the cut-worms are very fond, is scattered on the surface of the ground about the plants.

LEAF BLIGHT: RUST. (*Sphaerella fragariae*, Sacc.)

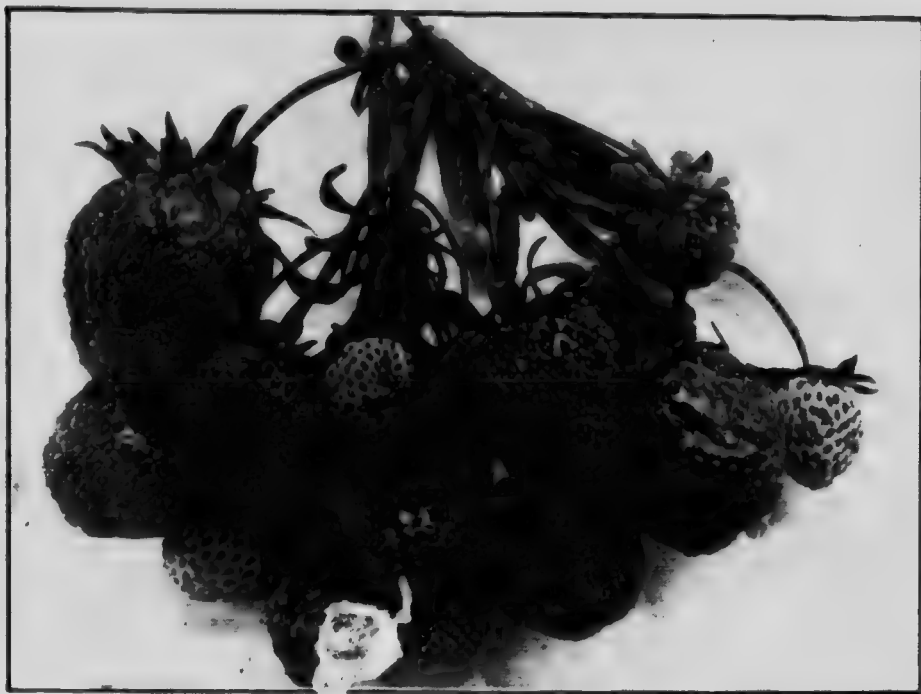
This disease does much injury to some varieties of strawberries by reducing the healthy leaf-surface and so lessening the vigour of the plants. When thus weakened, the plants are unable to develop fruit properly, the crop is much lessened and the quality of the fruit is poorer. Fewer and weaker runners are also made. Some varieties are much more affected than others and, where this disease is troublesome, those should be chosen which are the least affected by it. This information is given in the description of varieties published in this bulletin. It has been noticed that strawberries are more affected by the leaf blight when grown on sandy loam than on clay. The first indication of this disease is the appearance of round purplish or reddish-brown spots on the leaves during early summer. By the close of the picking season and often during the middle of it, these have become very numerous. The spots, which are at first small, also increase rapidly in size and often coalesce, thus involving a large proportion of the leaf, which finally withers. As the spots increase in size, the centres become white and from this white portion are given off myriads of spores which are carried to other leaves and plants, thus propagating the disease. Later in the season, winter spores are developed from the same spots, but these are carried over winter in small sacs which are attached to the leaf. These sacs do not permit the spores to escape until spring, when they cause the first infection.

Bordeaux mixture will check this trouble if thoroughly applied. In order to control the disease it is necessary to begin spraying just when the leaves unfold in the spring, to destroy the winter spores. A second spraying should be made as soon as bloom has fallen, a third immediately after the fruit has been picked, and, if possible, a fourth later on. New plantations should be sprayed during the growing season at as frequent intervals as are necessary to keep the foliage covered with the mixture.

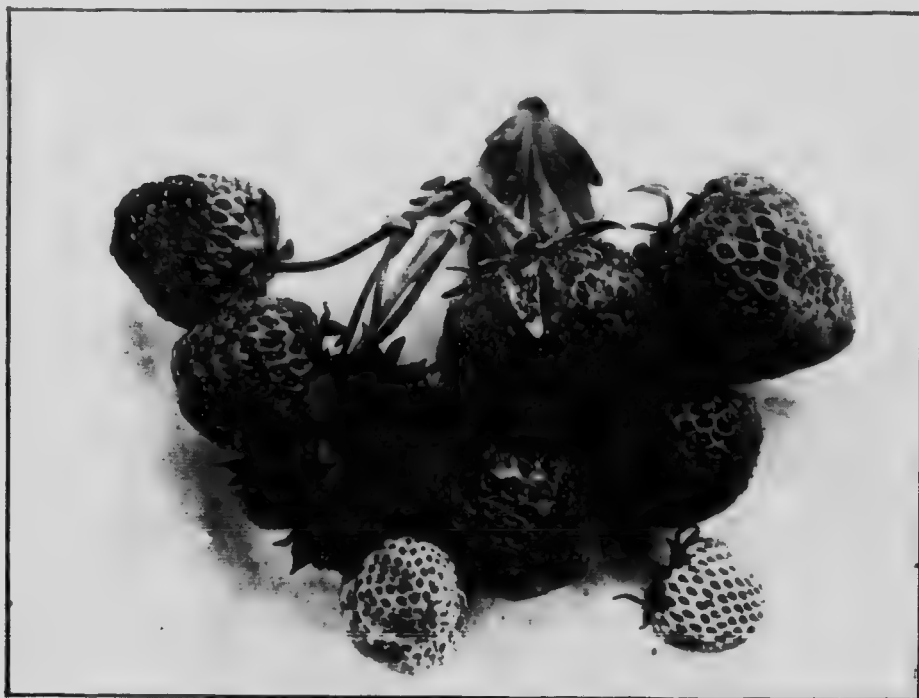
Some growers burn the foliage as soon as the picking season is over. The foliage is mowed off and then fired. An experiment was tried at the Central Experimental Farm to test the value of this method, twenty-nine varieties being burned, while a similar area of the same varieties was not burned. It was found that when there was an extra amount of litter lying on the rows, the crowns of the plants were somewhat injured by burning. The aftergrowth of the plants burned over was luxuriant and healthy, but rust soon developed. At the close of the season, however, the treated plants were much healthier than those untreated. In small plantations, a good plan would be to mow the foliage and after raking it off, burn it in piles where there would be no chance of injury to the plants.

POWDERY MILDEW OF THE STRAWBERRY. (*Sphaerotheca castagnei* Lev.)

The disease known as powdery mildew is not common in this country, but in one locality in Ontario, at least, it has done considerable harm and, as it may soon spread, it should be referred to here. When this disease is bad, it covers the fruit with mildew, making it unfit for sale or consumption. The grower does not usually notice the disease until it affects the fruit, but as a rule it starts on the under side of the leaves, which eventually curl up, and in order to control it, it must be treated early, as the plants cannot be sprayed satisfactorily when the fruit is developing, although ammoniacal copper carbonate might then be used. For spraying the foliage, Bordeaux mixture may be used or flowers of sulphur in the proportion of one part lime and two parts flowers of sulphur. It is important that the underside of the leaves should be well covered and even the soil, so that spores may be destroyed. These are scattered early in the spring from the tiny sacs in



Bisel.



Buster.

(PLATE 2.)

which they are contained during the winter. They soon germinate and attack the leaves. As this disease spreads only on the surface of the leaves, it is readily controlled if treated at the proper time.

COST OF GROWING ONE ACRE OF STRAWBERRIES.

While the strawberry crop is one of the most profitable to grow, it is also one of the most expensive, and in order to give those who may desire to begin growing strawberries for sale some idea of the cost of producing this fruit, the following estimates, furnished by representative growers, are given. We desire at this time to thank the growers who have thus enabled us to give this useful information:

	Grower.								
	1	2	3	4	5	6	7	8	9
Rent of Land.....	\$ 30.00	\$ 10.00	\$ 10.00	\$ 10.00	\$ 10.00	\$ 15.00	\$ 30.00	\$ 6.00	\$ 5.00
Preparation of Land.....	5.00	6.00	3.00	5.00	8.00	2.50	5.00	4.00	6.00
Fertilizers.....	50.00	7.50	25.00	25.00	20.00	30.00	22.50	10.00	30.00
Plants.....	30.00		25.00	35.00	24.00	36.00	15.00	20.00	17.42
Planting.....	5.00	7.00	3.00	10.00	5.00	7.50	4.50	5.00	6.00
Cultivation.....	30.00	25.00	5.00	25.00	15.00	9.50	25.00	7.00	2.00
Mulching.....	15.00	25.00	4.00	25.00	10.00	18.50	6.00	7.00	12.00
Additional expenses, including crates, boxes, picking and marketing.....	132.00	1.50		100.00	5.00	105.00	15.00	70.00	1.58
Average crop obtained.....	quarts 8000	boxes 3000	boxes 4500	boxes 4000	boxes 6400	boxes 5000	quarts 8800	boxes 4000	boxes 7000

No. 1.—J. I. Farquharson, Hull, Que.

No. 2.—C. P. Newman, Lachine Locks, Que.

No. 3.—Alex. Stewart, Hull, Que.

No. 4.—J. W. Morrison, Acton's Corners, Ont.

No. 5.—Chas. H. Snow, Cumming's Bridge, Ont.

No. 6.—W. J. Kerr, Ottawa, Ont.

No. 7.—S. H. Rittenhouse, Jordan Harbour, Ont.

No. 8.—H. M. Casselman, Arkona, Ont.

No. 9.—J. L. Hilborn, Le mington, Ont.

It will be noticed that the figures in the various columns vary considerably among the different growers.

Under "Rent of Land" the figures are higher under No. 1 because the land is valuable, and under No. 7 because the rent is for three years, while in most cases it is for two years. Under "Fertilizers," No. 2 is much smaller than the others, evidently because a larger proportion of the manure applied is charged to succeeding crops. Under "Plants," No. 2 claims that every grower should raise his own plants and that these should not be charged. Under "Additional expenses," only Nos. 1, 4, 6, and

8 give the total cost of picking, marketing and boxes, the others merely give the cost of sundries.

In the colder districts, occasional injury from winter lowers the average crop obtained.

Although the net profits are not given, the prospective grower can figure this out for himself from the prices at which berries are sold on the market where he proposes to sell his fruit.

VARIETIES OF STRAWBERRIES TESTED AT THE CENTRAL EXPERIMENTAL FARM,
OTTAWA, 1887-1909.

In the following table will be found a list of varieties of strawberries which have been tested at the Central Experimental Farm since the year 1887, when the first were planted. In this list there are 596 names, a few of which may be synonymous, but not many. PER. after a name means that a variety has perfect flowers; IMP. that the flowers are imperfect. In addition to the name, the date when each variety was first planted is given and, if discarded, the date when it was last tested. 1887-1904, for instance, signifies that a variety was planted first in 1887 and was discarded in 1904. Where new stock was obtained it is signified thus: 1887, 1892-1904. If a variety is still being tested, only the date or dates when first planted are given. The reasons for discontinuing a variety are also indicated by the initial letters: I. F. means a variety was discarded because of irregular form; I. P., inferior productiveness; I. Q., inferior quality; I. S., inferior size; I. V., inferior vigour; N. A., not attractive; N. H., not hardy; T. S., too soft; T. T., too tender; G. I., general inferiority.

Abundance, per., 1908	Auguste Nicaise, per., 1895-1903, I. P.
Abington, per., 1905	August Luther, per., 1900-1902.
Accomack, per., 1897-1901, I. F., I. P.	Australian Everbearing, imp., 1894-1901, I. S.
Ada, imp., 1895-1901, I. F.	Auto, per., 1903.
Afton, imp., 1897.	Autumn, 1909.
Alabama, per., 1890-1901, G. I.	Avery Seedling, imp., 1899-1904, I. P.
Albert, per., 1894-1904, I. P.	Bancroft, imp., 1887-1890, I. V., I. P.
Almo, imp., 1907	Barton's Eclipse, imp., 1892.
Alpha, imp., 1897-1901, T. S. G. I.	Banquet, per., 1895-1902, I. S.
Alpine, per., 1897-1899, G. I.	Battenburg, 1909.
Alpine Wood, per., 1888-1901, I. S.	Beauty, per., 1897-1902, I. P.
Amateur, per., 1887-1900, T. S., T. T.	Beaver, per., 1904.
Anna, per., 1909.	Beavers, per., 1906.
Anna Forest, per., 1887	Beder Wood, per., 1890.
Anna Kennedy, imp., 1896.	Beebe, per., 1894-1901, I. F., I. P., I. V.
Annie Laurie, per., 1894-1897, I. V.	Beidler, 1906.
Arkansas Black, per., 1907.	Belle, per., 1893-1901, I. F., I. P.
Arkansas Traveller, per., 1899	Belle of Lacrosse, per., 1897-1901, I. F., I. P.
Armstrong, per., 1902.	Belmont, per., 1887-1907, I. S., I. V., I. P.
Arnout, per., 1906.	Ben Davis, per., 1905.
Aroma, per., 1896-1901, I. P.	
Arrow, imp., 1899.	
Atlantic, per., 1887-1900, T. T.	
Auburn, imp., 1892-1901, G. I.	

Bennett, imp., 1901-1904, I. V., I. F.
 Berlin, imp., 1896-1902, G. I.
 Bessie, Imp., 1890-1900, T. T.
 Beverly, per., 1892.
 Bidwell, per., 1887-1889.
 Big Bob., imp., 1887-1889, I. P.
 Big Bobs, per., 1903.
 Bisel, imp., 1894.
 Bismark, per., 1899.
 Black Giant, per., 1887-1901, N. A.
 Blaine, per., 1909.
 Bob Bubach per., 1897-1901, I. P.
 Bob Rust, per., 1897-1901 I. P.
 Bomba, per., 1895.
 Bordelaise, per., 1888-1890, I. P., I. S.
 Bouncer, per., 1895-1904, I. F., N. A.
 Bountiful, per., 1909.
 Bower, per., 1909.
 Boyden, (No. 30), per., 1887-1890, I. P.
 Boynton, imp., 1892.
 Brandywine, per., 1894.
 Bright Ida, per., 1888-1890, I. V.
 Brilliant, imp., 1909.
 Brunette, per., 1894-1901, I. P.
 Bubach, imp., 1887.
 Bud's No. 7, per., 1899.
 Burt, per., 1889—Capt. Jack.
 Bush Cluster, imp., 1899-1902, G. I.
 Buster, (No. 53), imp., 1894.
 Cameron, (Early), per., 1903.
 Cameronian, per., 1892-1902, I. P.
 Captain Jack, per., 1887-1901 G. I.
 Cardinal, per., 1887-1895-1900, I. P.
 Cardinal (New), imp., 1905.
 Carleton, (X 297), imp., 1887.
 Carrie, (Crescent, 1861), imp., 1897.
 Carrie, imp., 1897-1904, T. S.
 Carrie Silvers, imp., 1902.
 Catharine, 1908.
 Caughell Seedling, per., 1894-1901, I. P.
 Chairs, imp., 1894-1900, G. I.

Challenge, per., 1903.
 Champion, per., 1887-1889, G. I.
 Champion of England, per., 1896.
 Charles Downing, per., 1887.
 Charlie, imp., 1894-1901 G. I.
 Chellie, per., 1903.
 Chesapeake, per., 1907.
 Child's First Season, per., 1894-1901, I. P.
 Child's, imp., 1895-1901 G. I.
 Chipman, per., 1908.
 Cinda, per., 1899-1904, G. I.
 Clark's Early, per., 1894-1896 I. P.
 Climax, per., 1904.
 Cloud, imp., 1889-1901, G. I.
 Clyde, per., 1896.
 Cobden Queen, imp., 1899-1902, G. I.
 Cohansick, per., 1888-1901, G. I.
 Cole's Seedling, per., 1900.
 Columbian, per., 1895-1901, I. S.
 Commander, per., 1896-1904.
 Commonwealth, per., 1894.
 Connecticut Queen, per., 1887-1889, N. A.
 Cooper, per., 1908.
 Cornelia, imp., 1888-1889, I. P., I. V.
 Corsican, per., 1907.
 Cosette, (X 175), imp., 1887-1901, G. I.
 Covill, per., 1887-1889, G. I.
 Coxcombe, per., 1896-1901, I. P., I. F.
 Crawford, per., 1887-1901, N. A.
 Crescent, imp., 1887.
 Crimson Cluster, imp., 1888-1897-1901, I. V., I. F.
 Crockett's, per., 1899-1904, N. A., T. S.
 Cruse's No. 9, per., 1897-1903, I. P.
 Cumberland Triumph, per., 1887-1889, T. T.
 Cyclone, per., 1896.
 Daisy, imp., 1887.
 Daniel Boone, imp., 1887.
 Darling, per., 1899-1902, G. I.
 Dayton, per., 1892-1901, N. A., T. S.
 Della, per., 1899-1904, I. P.

Devereux, per., 1899-1902, I. P.
 Dew, per., 1894-1902, I. P.
 Dewey, per., 1887-1902-1904, I. V., I. S.
 Dickey, per., 1908.
 Dollar Junior, per., 1902-1905, I. P.
 Dora (seedling of Crescent), imp., 1895.
 Dornan=Uncle Jim.
 Downer's Prolific, per., 1887-1889, G. I.
 Downing's Bride=Kittie Rice.
 Dr. Arp, imp., 1897.
 Earliest, per., 1899-1903, T. S., N. A.
 Early Beauty, per., 1903.
 Early Bird, imp., 1906.
 Early Canada, per., 1887-1902, I. S.
 Early Harvest, imp., 1909.
 Early Hathaway, per., 1904.
 Early Market, imp., 1909.
 Early Ozark, per., 1909.
 Evening Star, per., 1909.
 Edgar, per., 1899-1902, G. I.
 Edgar Queen, imp., 1896-1902, G. I.
 Edward's Favorite, per., 1894-1896, I. P.
 Effie May, per., 1897-1902, I. P.
 E. H. Ekey, per., 1906.
 Elba, per., 1899-1902, G. I.
 Eleanor, per., 1895.
 Elma, imp., 1894.
 Emerald, per., 1887-1889, I. P., I. V.
 Emperor, per., 1900-1904, I. P.
 Empress, per., 1899.
 Empress of India, per., 1895-1903, I. P.
 Enhance, per., 1887.
 Enormous, imp., 1894.
 Epicure, 1904.
 Epping, imp., 1895-1901, G. I.
 E. P. Roe, per., 1894-1900, G. I.
 Equinox, per., 1894-1901, I. P., N. A.
 Erie, imp., 1899-1902, N. A.
 Ernie, per., 1904.
 Eureka, imp., 1889-1902, I. P.
 Evans, per., 1899-1902, G. I.
 Evening Star, 1909.
 Excelsior, per., 1899.

Excelsior, imp., 1887-1889, I. Q., T. S.
 Fairfield, per., 1903.
 Fairy, imp., 1888-1889, N. A.
 Farnsworth, per., 1897-1901, I. S.
 Far West, per., 1896-1901, I. S.
 Fendall, per., 1909.
 Florella, 1906.
 Fountain, per., 1896-1901, I. P.
 Fremont, per., 1897-1901, I. S.
 Fremont Williams, per., 1909.
 Gandy Belle, per., 1897-1904, I. P., N. A.
 Gandy (Prize), per., 1887-1893.
 Gardner, per., 1895-1902, I. P., N. A.
 Garibaldi, imp., 1888-1901, I. P.
 Garretson, 1888-1889, G. I.
 Geisler, per., 1902.
 Gem, imp., 1894-1901, G. I.
 Genl. De Wet, per., 1905.
 Gen. Putman, imp., 1895-1902, G. I.
 Gertrude, per., 1894-1901, I. P.
 G. H. Caughell, per., 1896.
 Giant, per., 1895.
 Gibson, per., 1900.
 Gill, per., 1907.
 Gillespie, per., 1892-1901, I. V.
 Gladstone, per., 1899-1904, I. P.
 Glenfield, per., 1897-1900, I. S.
 Glen Mary, per., 1896.
 Gold, imp., 1887-1889, I. V., T. T.
 Golden Defiance, 1888-1889, G. I.
 Golden Gate, per., 1908.
 Golden Prolific, imp., 1888-1889, I. P.
 Goldsboro, per., 1908.
 Good Luck, per., 1907.
 Goree, 1909.
 Gov. Fifer, per., 1896-1901, G. I.
 Gov. Hoard, per., 1892-1901, G. I.
 Governor Rollins, imp., 1906.
 Grand Duke, imp., 1887-1889, I. P., I. V.
 Granville, per., 1903.

Great American, 1888-1899-1904, N. A., I. F.
 Great Prolific, imp., 1896-1901, G. I.
 Great Ruby, imp., 1904.
 Great Scott, imp., 1909.
 Green Prolific, imp., 1887-1901, G. I.
 Greenville, imp., 1893.
 Grosse Lombardt, 1896-1900, I. S., I. F.
 Gunton Park, per., 1895-1900, I. P.
 Hall's Favorite, per., 1899-1901, N. A.
 Ham, per., 1905.
 Hampden, imp., 1888-1889, I. V.
 Hatch Experiment Station, No. 24, imp., 1897.
 Hathaway, 1887-1889.
 Hattie Warfield, imp., (493), 1897.
 Haverland, imp., 1894.
 Hawaii, per., 1901.
 Hayden, per., 1899-1901, N. S.
 Hazel, imp., 1905.
 Heflin, per., 1905.
 Helen Gould, imp., 1907.
 Henderson, per., 1887-1889 I. P., I. V.
 Henry-Marshall, 1899.
 Heritage, per., 1908.
 Hero, per., 1902.
 Hersey, per., 1899-1902, I. S., I. P.
 Hiawatha, per., 1899-1902, T. S.
 Highland, imp., 1909.
 Hill's Manchester, per., 1897.
 H. and H., imp., 1899.
 Hoffman's Seedling, per., 1887-1901, I. P.
 Holland, imp., 1896-1902, G. I.
 Holland's Glory, per., 1899-1901, I. P., I. S.
 Homestead, per., 1899-1902, G. I.
 Hood River, per., 1899.
 Hope, or 53, per., 1894-1901, G. I.
 Horville, per., 1899-1902, I. P.
 Howard, per., 1905.
 Howard's No. 2, imp., 1904.
 Howard's No. 17, 1909.
 Howard's No. 25, per., 1897-1900, I. P.

Howard's 41, imp., 1897.
 Howell's Seedling, per., 1899-1902, I. V.
 Hunzmer, per., 1907.
 Hundred Dollar, per., 1907.
 Hunn, imp., 1897-1904, G. I.
 Hunt's No. 3, per., 1897-1901, I. P., N. A.
 H. W. Beecher, per., 1894-1896, I. P.
 Ideal, per., 1896-1901, G. I.
 Iowa Beauty, per., 1892-1904, I. P.
 Irene, imp., 1901.
 Isabella, per., 1897-1901, N. A.
 Island King, 1908.
 Itasca, per., 1887-1900, I. P. I. S.
 Ivanhoe, per., 1890-1902, I. S., T. S.
 Jacoma, per., 1908.
 James Vick, per., 1887-1901, I. S.
 Jay Gould, imp., 1893-1901, I. S., I. P.
 J. C. Bauer, 1909.
 J. C. Hale, per., 1894-1901, I. P., N. A.
 Jersey Market, imp., 1899-1902, I. S.
 Jersey Queen, imp., 1887-1897-1900, G. I.
 Jessie, per., 1887-1904, I. P.
 Jewel, imp., 1887-1889, G. I.
 Jim Dumas, per., 1909.
 Joe, per., 1901.
 John Little, imp., 1893.
 Johnson's Early, per., 1899-1904.
 Jucunda Improved, per., 1895-1901.
 Judsonia, per., 1897-1904, I. S., I. P.
 July, imp., 1909.
 Jumbo, per., - Cumberland, 1888.
 Kansas, imp., 1901.
 Kansas Prolific, per., 1899-1904, I. P., I. S.
 Kentucky, per., 1887-1902, N. S.
 King Edward, Ont., per., 1909
 King of the North, per., 1888-1901, I. P., N. A.
 King Worthy, per., 1899-1902, N. A.
 Kittie Rice, imp., 1904.

- Klickita, imp., 1895-1902, N. A.
 Klondike, per., 1899.
 Kossuth, per., 1897-1901, I. P.
 Kyle, per., 1899.
 Lacon, per., 1887-1889 G. I.
 Lady Rusk, imp., 1897-1901, I. F.
 Lady Thompson, per., 1896-1901, I. F., I. P.
 Lanah, per., 1897-1901, G. I.
 Latest, imp., 1903.
 Laxton's No. 1, per., 1894-1901, I. P.
 Laxton's Noble, per., 1899-1904, I. P.
 Leader, per., 1892-1902, I. V.
 Leader, per., 1899-1902, I. V.
 Leamington, 1900-1902, I. V.
 Legal Tender, per., 1888-1889, I. S.
 Leroy, imp., 1901-1903, I. P.
 Lester Lovett, per., 1902.
 Leviathan, per., 1897-1902, N. A.
 Lida, imp., 1887-1889, G. I.
 Liddle, per., 1899-1902, I. S.
 Little's No. 7, per., 1899-1902 G. I.
 Little's No. 30, imp., 1899.
 Lincoln, per., 1899.
 Livingston, per., 1900-1902, G. I.
 Lloyd, imp., 1899-1904, G. I.
 Lloyd's Favorite, imp., 1899 Seaford.
 Logan, imp., 1889.
 Long Dark Seedling, per., (A Glass), 1897-1902, I. P.
 Longfellow, per., 1887-1888, I. P., I. V.
 Longfield, imp., 1899-1902, I. S., N. A.
 Lord Suffield, per., 1894-1901, I. P.
 Louis, per., 1897-1901, I. P.
 Louis Gauthier, per., 1899.
 Louis Hubach, imp., 1904.
 Lovett, per., 1894.
 Lucas, per., 1904.
 Luxury, per., 1902.
 Lyon, imp., 1902.
 Maggie, per., 1887.
 Magoon, per., 1899-1905, I. P.
 Mammoth, per., 1887-1901, I. P.
 Manchester, imp., 1887-1890, T. T.
 Maxwell, per., 1899-1902, G. I.
 Maple Bank, imp., 1895-1901, G. I.
 Marie, imp., 1901.
 Mark Hanna, imp., 1904.
 Margaret, per., 1895-1901, I. V.
 Marshall, per., 1895.
 Martha, imp., 1890-1901 I. P.
 Mary, imp., 1894-1901, I. P.
 Mary Fletcher, per., 1887-1889, T. T.
 Mascot, per., 1909.
 Matilda, 1905.
 Matthew Crawford, per., 1908.
 Mattie Warfield, imp., 1897.
 Maximus, per., 1899.
 Mayflower, per., 1899.
 May King, per., 1887-1889, T. S., I. P.
 McKinley, per., 1899-1904 I. P.
 McNeil, per., 1908.
 Mead, per., 1905.
 Meek's Early, per., 1894-1901, I. S.
 Mele, imp., 1899.
 Melton, per., 1909.
 Mexican, per., 1895-1901, N. A.
 Miami, imp., 1888-1890, G. I.
 Michel's Early, per., 1897.
 Michigan, per., 1896-1901, I. P., N. A.
 Middlefield, imp., 1890-1901, G. I.
 Midnight, per., 1903.
 Miller, per., 1902.
 Miller's Seedling, No. 2, per., 1887-1901, I. F.
 Miller's Seedling, No. 11, imp., 1887-1901, G. I.
 Mineola, per., 1894-1901, I. P.
 Miner's Prolific, per., 1887-1888, G. I.
 Minnie's Early, per., 1908.
 Minute Man, imp., 1902.
 Missouri, per., 1904.
 Moline (Stone's No. 65), imp., 1895-1901, I. P.
 Monarch of the West, per., 1895-1901, G. I.
 Monitor, per., 1902.
 Monmouth, per., 1887-1888, G. I.

Montreuil, per., 1887-1889, I. S.
 Moore's Prolific, per., 1889-1890, T. T.
 Morgan's Favorite, per., 1897.
 Morning Star, per., 1904.
 Mount Vernon, per., 1887-1889, G. I.
 Mrs. Cleveland, imp., 1888.
 Mrs. Fisher, imp., 1907.
 Mrs. Garfield, per., 1887-1889, I. P., I. V.
 Mrs. McDowell, per., 1900-1904, I. P., I. F.
 Mrs. Miller, imp., 1905.
 Murray, 1905.
 Murray's Extra Early, imp., 1897-1901, I. F.
 Muskingum, per., 1890-1901, G. I.
 Myer's No. 1, imp., 1909.
 Mytrot, per., 1899-1902, I. S.
 Nehring's Gem, imp., 1897-1903, I. P., I. F.
 Nettie, imp., 1901.
 New Dominion, per., 1887.
 New Globe, per., 1902.
 New Home, per., 1907.
 Newnan Improved, per., 1899-1901, I. S.
 New York, per., 1901.
 Nicanor, per., 1887-1900, I. P.
 Nichol's Granville, per., 1904.
 Nick Ohmer, per., 1899.
 Nimrod, per., 1905.
 Ninety Six, per., 1904.
 Noble, per., 1894-1904, I. P.
 No Name, per., 1897.
 Norman, per., 1887-1901, G. I.
 Northern, per., 1897-1902, I. P., I. S.
 North Shore, per., 1906.
 Norwood, per., 1909.
 Oak's Early, per., 1908.
 Oberholtzer, No. 1, per., 1897-1901, G. I.
 Oberholtzer, No. 2, imp., 1897-1904, G. I.
 Oberholtzer, No. 4, imp., 1897-1901, N. A.
 Ocean City, per., 1897-1901, I. P., I. F.
 Ohio, imp., 1887-1889, G. I.
 Ohio Centennial, per., 1897-1902, I. P.
 Old Iron Clad, imp., 1887-1890, I. P.

Olive's Pride, per., 1904.
 Olympia, per., 1905.
 Ona, imp., 1897.
 Ontario, per., 1887=Sharpless
 Onward (No. 61), imp., 1895-1901, N. A.
 Oom Paul, per., 1903.
 Orange County, imp., 1894.
 Oregon Everbearing, imp., 1895.
 Oregon Iron Clad, per., 1903.
 Osceola, per., 1889=Michel's Early.
 Oswego, per., 1908.
 Otsego, imp., 1894-1901, G. I.
 Palmer, per., 1902.
 Pan American, per., 1909.
 Parker Earle Improved, per., 1899-1901, I. S.
 Paris King, per., 1894-1901, I. Q.
 Parker Earle, per., 1890.
 Parry, per., 1887-1889, T. T., I. P.
 Parson's Beauty, per., 1901.
 Patrick, per., 1897-1901, I. S.
 Paul Jones, 1909.
 Pearl, per., 1887-1901, G. I.
 Peerless, per., 1907.
 Pennell, per., 1900.
 Perfection, per., 1897-1904, T. S.
 Perpetual, per., 1905.
 Pet, per., 1899-1901, G. I.
 Phenomenal, per., 1899-1901, I. S.
 Phillip's Seedling, per., 1895-1902, I. F.
 Phipen, per., 1899-1902, I. S.
 Phoenix, per., 1899-1901, I. S.
 Photo, imp., 1887-1890, I. V.
 Pineapple, per., 1887-1901, I. F.
 Pipers, per., 1887-1888, I. S.
 Plover, per., 1887.
 Plow City, per., 1894-1900, I. P.
 Pocomoke, per., 1903.
 Ponderosa, per., 1899-1902, I. V.
 Porto Rico, imp., 1901-1904, I. V.
 Premium, imp., 1896-1900, I. V.
 President, imp., 1904.
 President Carnot, per., 1896-1900, I. S.

- President Victor Meurin, per., 1899.
 Pride of Cumberland, per., 1899-1902, N. A.
 Pride of Michigan, per., 1907.
 Prince of Berries, per., 1887-1901, I. P.
 Princess, imp., 1892.
 Princeton Chief, imp., 1893-1901, N. A.
 Prize, imp., 1897-1901, I. S., I. F., I. Q.
 Prof. Fisher, per., 1905.
 Quality, per., 1896-1901, I. P.
 Ralph H. Nyer, Sand Beach, N. S., seedling from 1909.
 Ray's Prolific, per. 1887-1888, I. V.
 Reba, imp., 1902-1905, I. P.
 Regina, imp., 1897-1901, I. S., I. P.
 Reliance, per., 1904.
 Repeater, per., 1900.
 Ridgeway, per., 1897.
 Rio, per., 1894-1901, I. S.
 Robbie, per., 1902.
 Robinson, per., 1894-1901, I. P.
 Rough Rider, per., 1900.
 Royal Hautbois, per., 1887-1901, I. S., I. P.
 Royal Sovereign, per., 1896-1900, I. P., I. V.
 Ruby, per., 1887-1900, I. S., I. P.
 Ruby (new), per.
 Ryckman, per., 1904.
 Sadie, imp., 1895-1904, I. P., I. S.
 Sample, imp., 1899.
 Sampson, per., 1902.
 Sam Sperry, per., 1897.
 Sandoval, per., 1894-1903, G. I.
 Saratoga, per., 1908.
 Satisfaction, per., 1896.
 Saunders, per., 1896-1904, I. P., I. V.
 Sawlog, imp., 1899-1901, I. S.
 Scarlet Ball, imp., 1895.
 Scarlet Queen per., 1894-1901, I. S., I. P.
 Schoene Anhaltinerin, per., 1899-1900, I. S.
 Schoene Meissnerin, per., 1899-1901, I. S.
 Scofield Seedling, 1908.
 Seaford, imp., 1895 (Lloyd).
 Seedling from Brookings, S. D., per., 1907.
 Seedling from Livingstone, Frankville, Ont., 1907.
 Senator Dunlap, per., 1900.
 Seneca Queen, per., 1887-1901, G. I.
 Sensation, per., 1894-1902, I. P.
 Sharpless, per., 1887-1903, I. P.
 Sharpless Seedling, (A. Glass) per., 1897.
 Sherman, per., 1895.
 Shirts, per., 1887-1901, I. F.
 Shuckless, per., 1893-1901, I. V., N. A.
 Shuster's Gem, imp., 1895-1901, I. F.
 Silver Coin, per., 1909.
 Smeltzer, per., 1896-1901, I. S., T. S.
 Smith's Seedling, per., 1893-1901, I. P.
 C. W. Smith, Yarmouth, N. S., Seedling No. 5, 1905.
 C. W. Smith, Yarmouth, N. S., Seedling No. 12, 1905.
 Snowball, per., 1896.
 Snow Flake, per., 1887-1889, G. I.
 Snow's Perfection, 1900—Gibson.
 Southard, per., 1895-1901, I. P.
 Sparta, per., 1895-1901, N. A.
 Splendid, per., 1895-1902.
 Springdale Beauty, per., 1901-1903, I. P.
 Standard per., 1892-1901, G. I.
 Staples, per., 1895-1902, G. I.
 Star, per., 1897-1902, I. P.
 Stayman's No. 1, imp., 1889-1901, N. A.
 Stella, imp., 1902-1904, G. I.
 Sterling, imp., 1887-1889, I. P., I. V.
 Stevens Early, imp., 1897.
 Steven's Late Champion, per., 1905.
 Stone's Early, imp., 1897.
 Stone's No. 7, per., 1897-1901, I. P.
 St. Joseph, per., 1899-1904, I. P.

- St. Louis, per., 1908.
 Success, per., 1903.
 Sucker State, per., 1887-1889, G. I.
 Summit, imp., 1887-1889, G. I.
 Sunapee, per., 1887-1889, G. I.
 Sunnyside, imp., 1896.
 Sunrise, imp., 1894-1902, I. F.
 Sunshine, imp., 1902.
 Superior, per., 1903.
 Surprise, per., 1887.
 Sutherland, imp., 1902.
 Swindle, per., 1894-1904 I. F.
 Taft, 1909.
 Tennessee Prolific, per., 1894.
 Tennyson, per., 1899-1901, G. I.
 Teutonia, per., 1895-1900 I. P.
 Texas, per., 1903-1904, I. S.
 Three Ws., per., 1908.
 Thompson's No. 2, per., 1909.
 Timbrell imp., 1893-1897-1904, I. P.
 Thompson's Earliest, 1906.
 Thompson's Late, imp., 1894.
 Thompson's No. 2, per. 1906.
 Triumph de Gand, per., 1887-1889, G. I.
 Tubbs, per., 1896-1901, T. S.
 Turner's Beauty, per., 1889-1901, I. P.
 Twentieth Century, per., 1906.
 Twilight, per., 1899.
 Uncle Jim (Dornan), per., 1902.
 Uncle Joe, per., 1906.
 Uncle Sam, imp., 1896-1901, I. P., I. S.
 Up-to-Date, per., 1899-1901, I. S.
 Van Deman, per., 1892.
 Velvet, imp., 1905.
 Vera, imp., 1892-1901, G. I.
 Victor, per., 1905.
 Viktor, 1907.
 Victor Hugo, per., 1894-1896, I. P.
 Vineland, per., 1887-1888, G. I.
 Vories, per., 1899-1904 G. I.
 Virginia, per., 1907.
 Wantzel, per., 1897-1901 G. I.
 Warfield (No. 2), imp., 1888.
 Warren's Seedling, 1907.
 W. H. Taft, per., 1909.
 Watson, imp., 1897-1901, G. I.
 Welch, Horace G., seedling from 1905.
 Wesley, per., 1896-1901, I. S.
 Westbrook Improved, imp., 1899-1902, I. S.
 West Brook, imp., 1892-1901, G. I.
 Westlawn, imp., 1892-1900, I. P.
 Weston, imp. 1895-1901, G. I.
 White Alpine, per., 1900-1901 G. I.
 White Novelty, per., 1894-1901, I. P., I. S.
 Wicomico, imp., 1897-1901, N. A.
 Williams, per., 1890-1893.
 Will Warfield, (147), per., 1897-1902, N. A.
 Wilson, per., 1887.
 Windsor Chief, imp., 1887-1901, G. I.
 Winnie Warfield, (142), imp., 1897.
 W. J. Bryan, per., 1900-1904, I. V.
 Wm. Belt, per., 1894.
 Wonder, per., 1904.
 Wonderful, imp., 1887= Windsor Chief.
 Woodhouse, imp., 1887-1890, T. T.
 Woodruff, per., 1887-1890, T. T.
 Woolverton, per., 1890-1893.
 Woolverton Seedling, No. 60, imp., 1894-1901, G. I.
 World's Champion, per., 1899.
 World's Wonder, per., 1908.
 Yale, per., 1890-1896, I. P.
 Yant, per., 1902.
 Young's Seedling, per., 1896-1904, I. S.

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